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AFL Telecommunications
A Fujikura Business

Test & Inspection

OTDRs

Microscopes

Loss Test Sets

Power Meters

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Test & Inspection

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AFL's Noyes Test & Inspection Equipment product line offers a comprehensive set of fiber optic test equipment for measuring, maintaining and documenting the performance of fiber optic networks. In every area of manufacturing, AFL combines the latest equipment, production techniques and test systems to create products with world-class performance.

NEW

DFS1 Digital FiberScope

DFS1 Digital FiberScope with M200 OTDR

Features

- Ergonomic, hand-held design
- Single-handed operation
- 400x magnification
- Fast, easy focus and display capture
- Video output via USB port to M200, M700, C840, C850, C860, or C880
- Powered from USB; no batteries required
- Extensive assortment of interchangeable fiber connector and bulkhead adapter tips
- Adapter tips easily changed; no tools required

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DFS1 Digital FiberScope

The DFS1 Digital FiberScope supports magnified video inspection of optical fiber connector end-faces during fiber optic cable and connector installation and maintenance. The ergonomically designed hand-held unit illuminates fiber end-faces and delivers magnified images via USB port to AFL's M-series OTDRs (M200, M700) or C-series OTDRs and Certification Testers (C840, C850, C860, C880). FiberScope software displays, labels, and stores captured images as part of connector installation and/or maintenance records.

A large adjustment knob permits easy focusing using real-time view. Once focused, a conveniently located trigger button signals the attached display device to capture the image for analysis and archiving. The scope's ergonomic shape and control locations support comfortable, single-handed operation.

The DFS1 is powered through the USB port, eliminating the need for an additional battery or AC power supplies. Electronic video inspection eliminates all danger of eye damage from active (lit) fibers carrying either visible or infrared wavelengths.

An extensive assortment of adapters supports inspection of a wide range of optical jumper cable connector ferrules and bulkhead adapters. Bulkhead adapter tips are available in multiple lengths as well as 60° angle. Connector adapters are available for PC, UPC, or APC polished ferrules in 1.25 mm, 2.5 mm and other diameters.

The DFS1 is available in three different kits which provide either PC/UPC adapters, APC adapters, or no adapters. All kits include soft carry case, an adapter tip storage box, quick reference guide, plus FiberScope display software update for M200, M700, C840, C850, C860, and C880.

Applications

- Ideal for Telco, Broadband, and Enterprise applications
- Optical connector and bulkhead adapter inspection
- Display and analyze fiber end-face quality on M200, M700, C840, C850, C860, or C880
- Visually inspect fiber end-faces for damage or contamination impairing optical transmission
- Generate installation inspection records, associating captured digital photo with fiber ID

C850 Compact QUAD OTDR with QUAD OLS and OPM

The Noyes C850 from AFL Telecommunications is a full-featured QUAD OTDR in a compact case with a large transflective touch screen display suitable for both indoor and outdoor operation. The C850 offers built-in auto test functionality when used with another C850 or the C840 QUAD Certification Tester. The C850 features single-mode and multimode OTDR capabilities, both single-mode and multimode Optical Light Sources (OLS), Visual Fault Locator (VFL, 650 nm), and an Optical Power Meter (OPM). As an OTDR, the C850 supports Full Auto, Expert (manual) and Real-Time test modes, simultaneous dual and single wavelength testing, and Event and Pass/Fail analysis based on default or user-defined thresholds.

Two C850s or a C840 Tester and C850 can be used together to perform Tier 1 dual wavelength MM (850/1300 nm) and SM (1310/1550 nm) auto tests of one or two fibers in one or both directions as well as measure both loss and length of the fibers and compare to industry standards (TIA/ISO/EN), applications and user-defined thresholds values to certify the fibers. The user may test two fibers at two wavelengths bi-directionally and store the results into the main unit. Featuring rich file naming, the Job setup wizard allows the user to define both the cable and fiber end locations, creating easily identifiable trace files, which are managed into Job and Cable folders.

Features

- OTDR dynamic range:
  - 22 dB (MM)
  - 26 dB (SM)
- Integrated OPM, OLS, and VFL (650 nm)
- OLS sources:
  - LED - 850/1300 nm
  - Laser - 1310/1550 nm
- Full Auto, Expert, Real-Time OTDR test modes
- 6.5-inch transflective (indoor/outdoor) touch screen display
- Tool-free, switchable test port adapters
- Rechargeable Li-Ion battery (> 8 hours) or AC power
- USB host and function ports
- Bellcore (GR-196) .SOR file format
- Internal (1000s tests) and USB storage
- Wave ID detect if used with Noyes Wave ID series light sources
- Windows® compatible software

Applications

- Tier 1 and Tier 2 testing of premise networks
- Bi-directional two fibers and single fiber test capable
- Perform Pass/Fail Event and Link measurements
- Find faults using integrated Visual Fault Locator
- Save loss or power measurements
- Use as single-mode laser or multimode LED source
- Certify fibers using Pass/Fail criteria of industry standards, applications and user-defined limits
- Create professional certification reports

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C850 Compact QUAD OTDR with QUAD OLS and OPM

Ordering Information

The C850 OTDR Kits and Options allow users to buy the test equipment functionality needed today and grow to meet the demands of certification testing.

The C850 combined with an OLS 4 source will allow users to test and generate detailed reports with both OTDR and Loss results shown for each fiber and in charts by cable.

Users can add a C840 or another C850 to perform Certification testing. Two C850s or a C840 Tester and C850 can be used together to perform Tier 1 dual wavelength MM (850/1300 nm) and SM (1310/1550 nm) auto tests of one or two fibers in one or both directions as well as measure both loss and length of the fibers and compare to industry standards (TIA/ISO/EN), applications and user-defined thresholds values to certify the fibers.

When placing an order, select options as follows: Model, Optical Configuration, Language, and Case.

Example: C850 — 100 — LP1 — H2

C850 — NNN — LLL — CC

Model

C850

Optical Configuration (NNN)

100 = QUAD 850/1300 nm MM and 1310/1550 nm SM

Language (LLL)

LP1 = Language Pack: English, German, French, Spanish, Italian, Portuguese
JPN = Japanese/English
CHI = Chinese/Taiwanese/English
RUS = Russian/English
KOR = Korean/English
ARA = Arabic/English

Case (CC)

S1 = Soft case
H1 = Hard case and soft case with cleaning accessories
H2 = Hard and soft case with SC-LC test and cleaning accessories
H3 = **H2** option plus OFS300-200X microscope
H4 = **H2** option plus spare battery and charger
H5 = Hard and soft case with SC-ST test and cleaning accessories
H6 = **H5** option plus OFS300-200X microscope
H7 = **H5** option plus spare battery and charger

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C850 Compact QUAD OTDR with QUAD OLS and OPM

Ordering Information (continued)

Each C850 kit includes the C850 OTDR, USB Flash drive, PC software for OTDR trace analysis and certification or OPM loss reporting, AC adapter, switchable test ports adapters and accessories (see table below).

KIT MODEL NUMBER	CARRY CASE AND ACCESSORIES	FIBER RINGS[1]	CLEANING PRODUCTS	ADAPTERS		
				OTDR/OLS	OPM	VFI
C850-100-LP1-S1	Soft case	—	One-Click Cleaner SC/ST/FC, 2.5mm	SC, ST, LC	SC, 2.5mm, 1.25mm	2.5mm 1.25mm
C850-100-LP1-H1	Soft and hard cases	—	One-Click Cleaner SC/ST/FC, 2.5mm One-Click Cleaner LC, 1.25mm Cletop - SB white tape	SC, ST, LC	SC, 2.5mm, 1.25mm	2.5mm 1.25mm
C850-100-LP1-H2	Soft and hard cases	SC/LC		SC, ST, LC	SC, 2.5mm, 1.25mm	2.5mm 1.25mm
C850-100-LP1-H3	Soft and hard cases, OFS300-200C	SC/LC		SC, ST, LC	SC, 2.5mm, 1.25mm	2.5mm 1.25mm
C850-100-LP1-H4	Soft and hard cases, charger, spare battery	SC/LC		SC, ST, LC	SC, 2.5mm, 1.25mm	2.5mm 1.25mm
C850-100-LP1-H5	Soft and hard cases	SC/ST	One-Click Cleaner SC/ST/FC, 2.5mm Cletop - SB white tape	SC, ST, LC	SC, 2.5mm, 1.25mm	2.5mm 1.25mm
C850-100-LP1-H6	Soft and hard cases, OFS300-200C	SC/ST		SC, ST, LC	SC, 2.5mm, 1.25mm	2.5mm 1.25mm
C850-100-LP1-H7	Soft and hard cases, charger, spare battery	SC/ST		SC, ST, LC	SC, 2.5mm, 1.25mm	2.5mm 1.25mm

1 (2) each - 150m (62.5µm, 50µm, SM)

C850—100—LP1—H2 (or H5) Kit Contents

ITEM	DESCRIPTION
C850	QUAD OTDR/Auto Test Certification Tester
Adapters	OTDR and OLS ports — SC, ST, LC OPM port — SC, 1.25 and 2.5mm Universal VFI port — 1.25 and 2.5mm Universal
Fiber Rings (6)	150 m (62.5µm, 50µm, SM)
Miscellaneous Accessories	Mandrel — 62.5µm, 3mm jacket
	Mandrel — 50µm, 3mm jacket
	Stylus pen for touch screen
	USB thumb drive, 1G
	USB to mini-USB cable
	Small plastic parts box (2) to store adapter caps and mandrels
	AC adapter (1), specify country of use
Cleaning Accessories	One-Click Cleaner SC/ST/FC, 2.5mm (H2 and H5 kit)
	One-Click Cleaner LC/MU, 1.25mm (H2 kit only)
	Cletop SB white tape
Cases	Hard transit case — holds C850, and above accessories
	Soft case for C850
Documentation	User guides and quick reference guides
Report Software	PC software and user guide

Optional OTDR and Cleaning Accessories

MODEL NUMBER	DESCRIPTION
FR1-SM-150-SC-FC	Fiber ring, single-mode, SC/FC, 150 m
FR1-SM-150-SC-LC	Fiber ring, single-mode, SC/LC, 150 m
FR1-M6-150-SC-ST	Fiber ring, multimode, 62.5µm, SC/ST, 150 m
FR1-M6-150-SC-LC	Fiber ring, multimode, 62.5µm, SC/LC, 150 m
FR1-M5-150-SC-ST	Fiber ring, multimode, 50µm, SC/ST, 150 m
FR1-M5-150-SC-LC	Fiber ring, multimode, 50µm, SC/LC, 150 m
FR1-L5-150-SC-LC	Fiber ring, laser optimized, multimode, 50µm, SC/LC, 150 m
FR1-L5-150-SC-SC	Fiber ring, laser optimized, multimode, 50µm, SC/SC, 150 m
FR1-SM-500-SC-LC	Fiber ring, single-mode, SC/LC, 500 m
FR1-SM-500-SC-SC	Fiber ring, single-mode, SC/SC, 500 m
FR1-SM-500-SC-FC	Fiber ring, single-mode, SC/FC, 500 m
8500-20-0900	Wet Cleaning Kit for SC/FC/ST/LC Connectors
8500-05-0001MZ	One-Click Cleaner SC/ST/FC
8500-05-0002MZ	One-Click Cleaner LC/MU
8500-10-0017MZ	Replacement tape for Cletop (white)

Note: 1000 m single-mode fiber rings are also available.

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C850 Compact QUAD OTDR with QUAD OLS and OPM

Specifications (All specifications valid at 25°C unless otherwise specified)

OTDR	MULTIMODE	SINGLE-MODE
Emitter Type	Laser	
Safety Class	Class I FDA 21 CFR 1040.10 and 1040.11, IEC 60825-1: 2007-03	
Center Wavelengths	850/1300 nm	1310/1550 nm
Wavelength Tolerance	± 20/30 nm	± 20/30 nm
Dynamic Range (SNR = 1)	22 dB	26 dB
Event Dead Zone [1]	1.5 m	
Attenuation Dead Zone [2]	9 m	
Pulse Widths	10, 30, 100, 300 ns; 1, 3, 10 µs	
Range Settings	250 m to 64 km	250 m to 208 km
Sampling Points	Up to 16,000	
Min. Data Point Spacing	0.25 m	
Group Index of Refraction (GIR)	1.4000 to 1.6000	
Distance Uncertainty (m) [3]	± (1 + 0.005% x distance + data point spacing)	
Linearity	± 0.05 dB/dB	

1 *Typical distance between the two points 1.5 dB down each side of a reflective spike caused by a -45 dB event using 10 ns pulse width.*
2 *Typical distance from event location to point where trace is within 0.5 dB of backscatter caused by a -45 dB event using 10 ns pulse width.*
3 *Does not include GIR uncertainty.*

LIGHT SOURCE	MULTIMODE PORT	SINGLE-MODE PORT
Available Wavelengths	850/1300 nm (nominal)	1310/1550 nm (nominal)
Emitter Type	LED	Laser
Safety Class	Class I FDA 21 CFR 1040.10 and 1040.11, IEC 60825-1: 2007-03	
Output Power	> - 20 dBm, 62.5µm MM [1]	0 dBm, 9µm SM
Stability (after 15 minutes warm up)	± 0.1 dB over 1 hour	± 0.07 dB over 1 hour ± 0.15 dB over 8 hours
Wave ID Transmit	Yes	
Tone Generation	270 Hz, 330 Hz, 1 kHz, 2 kHz	

1 *Output power will be approximately 3 dB less if a 50 µm mandrel-wrapped jumper is used instead of a 62.5 µm mandrel-wrapped jumper.*

VISUAL FAULT LOCATOR	
Emitter Type	Laser
Safety Class	Class II FDA 21 CFR 1040.10 and 1040.11, IEC 60825-1: 2007-03
Wavelength	650 nm
Output Power (nominal)	0.8 mW

POWER METER	
Calibrated Wavelengths	850, 1300 1310, 1490, 1550, 1625 nm
Detector Type	InGaAs 2mm
Measurement Range	+6 to -60 dBm
Accuracy [1]	±0.25
Measurement Units	dB, dBm, mW
Wavelength ID [2]	Yes (to -47 dBm)
Set Reference	Yes
Data Storage	Yes
Tone Detection	Yes (to -47 dBm)

1 *Accuracy measured at 25ºC and -10 dBm per N.I.S.T. standards.*
2 *Automatic wavelength identification and switching when used with Noyes Wave ID Series Light Sources.*

GENERAL	
Test Modes	OTDR (Full Auto, Expert, Real-Time), Auto Test, OPM, OLS, VFL
Trace File Format	SR-4731 (GR-196-CORE Appendix A, B; SR-4731)
Length Measurement Range	5 km (MM); 200 km (SM)
Data Storage	Internal flash memory
	USB flash drive (2.0)
	Downloadable from unit directly to PC
Data Storage Capacity	Internal > 1000 fibers
Data Transfer to PC	USB
Tool Free Adapters	Modular cleanable SC/ST/LC
Size	27.4 x 19.3 x 7.1 cm (10.8 x 7.6 x 2.8 in)
Weight	2.3 kg (5 lb)
Operating Temperature	-10 to +50°C, 0 to 90% RH (non-condensing)
Storage Temperature	-20 to +60°C, 0 to 90% RH (non-condensing)
Power	Rechargeable Li-Ion or AC power adapter
Battery Life [1]	> 8 hours continuous testing
Recharge Time [2]	4 hours
Display	16.51 cm (6.5 in), color, transflective

1 *Typical, depending on display brightness.*
2 *Typical, from fully discharged to fully charged state, unit may be operating. External battery charger available.*

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M700 Compact Single-mode OTDR

The Noyes M700 from AFL Telecommunications is a compact, full-featured, single-mode OTDR that includes an integrated Visual Fault Locator (VFL), an Optical Power Meter (OPM) capable of displaying up to three wavelengths simultaneously, and a large transflective touch screen display suitable for both indoor and outdoor operation.

The M700 OTDR supports Real-Time, Full-Auto, and Expert (manual) modes, precision event analysis, dual-wavelength testing, rich file naming, and an intuitive job set-up functionality. In addition to OTDR event analysis, pass/fail acceptance values can be set to alert the test operator of failing or marginal events. Using one of the Least Squares Approximation (LSA) loss methods, events may be added or deleted manually.

Thousands of OTDR and OPM test results can be stored internally or on the supplied USB drive, and are transferable via a USB cable or drive to a computer for viewing, printing and analyzing with supplied Windows® compatible software. Saved OPM loss values for a cable in one or two directions can be displayed in a table on the M700 for evaluation and comparison.

With short dead zones, a dynamic range of 38 dB, and greater than 8-hour battery life during continuous testing, the M700 is perfect for testing optical fibers in service provider metro areas.

Features

- 38/36 dB dynamic range @ 1310/1550 nm
- Integrated Optical Power Meter (OPM) and Visual Fault Locator (VFL, 650 nm)
- LSA Measurements and manual events in Expert mode
- Pass/Fail Event and Link Thresholds settings
- OTDR results saved as industry standard (GR-196) .SOR files
- OPM stores results and displays up to three wavelengths simultaneously
- Large, high bright, sunlight readable, transflective touchscreen
- Tool-free, switchable adapters (SC/FC/LC)
- Integrated fiber launch ring holder
- 2 USB host ports
- USB drive and Windows® compatible software included

Ordering Information

MODEL	DESCRIPTION	TEST PORT ADAPTERS
M700-11-0901PR	1310/1550 nm single-mode OTDR	SC, FC, and LC *

* *ST test port adapter is available (order separately).*
Standard accessories include are USB Flash drive, PC software for OTDR trace analysis and OPM Loss reporting, AC adapter, user guide, soft carry case, 1.25 and 2.5mm Universal adapters for VFL and OPM, SC, FC and LC adapters for the OTDR (ST available, purchased separately).

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M700 Compact Single-mode OTDR

Specifications

OTDR	
Emitter Type	Laser
Safety Class	Class I FDA 21 CFR 1040.10 and 1040.11, IEC 60825-1: 2007-03
Center Wavelengths	1310/1550 nm
Dynamic Range (SNR = 1)	38/36 dB (1310/1550 nm)
Event Dead Zone [1]	0.9 m
Attenuation Dead Zone [2]	4.5 m
Pulse Widths	5, 10, 30, 100, 300 ns, 1, 3, 10, 20 µs
Range Settings	250 m to 256 km
Sampling Points	max. 64,000 points
Min Data Point Spacing	0.125 m
Group Index of Refraction (GIR)	1.4000 to 1.6000
Distance Uncertainty (m) [3]	± (1 + 0.0005% x distance + data point spacing)
Linearity	± 0.05 dB/dB (typical)
Trace File Format	Bellcore GR-196 Version 1.1
Trace File Storage Media	Internal flash memory
	USB flash drive
	Downloadable from OTDR directly to PC
Trace File Storage Capacity	Internal 1000 fibers
Data Transfer to PC	USB
OTDR Modes	Full Auto, Real Time, Expert
Tool Free adapters	Modular cleanable SC/ST/FC/LC

1 Typical distance between the two points 1.5 dB down each side of a reflective spike caused by a -45 dB event using 5 ns pulse width.

2 Typical distance from event location to point where trace is within 0.5 dB of backscatter caused by a -45 dB event using 5 ns pulse width.

3 Does not include GIR uncertainty.

VISUAL FAULT LOCATOR	
Emitter Type	Laser
Safety Class	Class II FDA 21 CFR 1040.10 and 1040.11, IEC 60825-1: 2007-03
Wavelength	650 nm
Output Power (nominal)	0.8 mW

POWER METER	
Calibrated Wavelengths	850, 980, 1310, 1490, 1550, 1625 nm (displays up to 3 simultaneously)
Detector Type	Filtered InGaAs detector
Measurement Range (dBm)	+26 to -50 dBm
Accuracy [4]	±0.25
Measurement Units	dB, dBm, mW
Wavelength ID [5]	Yes
Set Reference	Yes
Data Storage	Yes
Tone Detection	270 Hz, 330 Hz, 1 kHz, 2 kHz

GENERAL	
Size	27.4 x 19.3 x 7.1 cm (10.8 x 7.6 x 2.8 in)
Weight	2.3 kg (5 lb)
Operating Temperature	-10 to +50°C, 0 to 90% RH (non-condensing)
Storage Temperature	-20 to +60°C, 0 to 90% RH (non-condensing)
Power	Rechargeable Li-Ion or AC power adapter
Battery Life [6]	> 8 hours continuous OTDR testing
Recharge Time [7]	4 hours
Display	6.5 in (16.51 cm), color, transflective

4 Accuracy measured at 25ºC and -10 dBm per N.I.S.T. standards.

5 Automatic wavelength identification and switching when used with Noyes Wave ID Series Light Sources.

6 Typical, depending on display brightness.

7 Typical, from fully discharged to fully charged state, unit may be operating.

All specifications are subject to change.

All specifications valid at 25°C unless otherwise specified.

External battery charger available.

OTDR Fiber Accessories

MODEL NUMBER	DESCRIPTION
FR1-SM-1KM-SC-FC	Fiber Ring SM SC/FC 1000m
FR1-SM-1KM-SC-LC	Fiber Ring SM SC/LC 1000m
FR1-SM-1KM-ASC-SC	Fiber Ring SM SC-APC/SC-UPC 1000m
8500-20-0900	Wet Cleaning Kit for SC/FC/ST/LC Connectors

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M650 Compact QUAD OTDR

Features

- 22 dB (MM), 26 dB (SM) dynamic range
- Integrated OPM and VFL (650 nm)
- Full Auto, Expert, and Real-Time OTDR test modes
- 6.5-inch transflective (indoor/outdoor) touch screen display
- Tool-free, switchable test port adapters
- Rechargeable Li-Ion battery (> 8 hours) or AC power
- USB host and function ports
- Bellcore (GR-196) .SOR file format
- Internal (1000s test results) and USB storage
- Windows® compatible software

Applications

- Tier 1 and 2 testing of premise networks
- Perform Pass/Fail Event and Link measurements
- Find faults using integrated Visual Fault Locator
- Save loss or power measurement
- Splice verification
- Network documentation

The Noyes M650 from AFL Telecommunications is a compact, full-featured, QUAD OTDR with an integrated Visual Fault Locator (VFL, 650 nm), Optical Power Meter (OPM), and a large transflective touch screen display suitable for both indoor and outdoor operation. With short dead zone and intermediate range specifications, the M650 is ideal for Tier 2 testing of premises (building and campus) networks.

The M650 OTDR supports Full Auto, Expert (manual), and Real-Time test modes, precision event analysis, dual-wavelength testing, rich file naming, and an intuitive job setup functionality. In addition to OTDR event analysis, pass/fail acceptance values can be set to alert the test operator of failing or marginal events. Using one of the Least Squares Approximation (LSA) loss methods, events may be added or deleted manually.

Thousands of test results may be stored internally for transfer to a computer via a USB cable or a standard USB drive. Once test data is transferred to a computer, the supplied Windows® compatible software allows technicians to view, print, and generate professional reports. Saved OPM loss values for a cable in one or two directions can be displayed in a table on the M650 OTDR for evaluation and comparison.

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M650 Compact QUAD OTDR

M650-100-LP1-S1 Kit

M650-100-LP1-H2 (or H5) Kit

Ordering Information

When placing an order, select options as follows: Model, Optical Configuration, Language, and Case.

Example: M650 — 100 — LP1 — H2

M650 — NNN — LLL — CC

Model

M650

Optical Configuration (NNN)

100 = QUAD 850/1300 nm MM and 1310/1550 nm SM

Language (LLL)

LP1 = Language Pack: English, German, French, Spanish, Italian, Portuguese
JPN = Japanese/English
CHI = Chinese/Taiwanese/English
RUS = Russian/English
KOR = Korean/English
ARA = Arabic/English

Case (CC)

S1 = Soft case
H1 = Hard and soft case with cleaning accessories
H2 = Hard and soft case with SC-LC test and cleaning accessories
H3 = **H2** option plus OFS300-200X microscope
H4 = **H2** option plus spare battery and charger
H5 = Hard and soft case with SC-ST test and cleaning accessories
H6 = **H5** option plus OFS300-200X microscope
H7 = **H5** option plus spare battery and charger
H9 = **H6** option plus OLS4 light source

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M650 Compact QUAD OTDR

Ordering Information (continued)

Combining the M650 with an OLS 4 source will allow users to test and generate detailed reports with both OTDR and Loss results shown for each fiber and in charts by cable.

Each M650 kit includes the M650 OTDR, USB Flash drive, PC software for OTDR trace analysis and OPM loss reporting, AC adapter, switchable test ports adapters, and accessories (see table below).

KIT MODEL NUMBER	CARRY CASE AND ACCESSORIES	FIBER RINGS[1]	CLEANING PRODUCTS	ADAPTERS		
				OTDR	OPM	VFI
M650-100-LP1-S1	Soft case	—	One-Click Cleaner SC/ST/FC, 2.5mm	SC, ST, LC	SC, 2.5mm, 1.25mm	2.5mm 1.25mm
M650-100-LP1-H1	Soft and hard cases	—	One-Click Cleaner SC/ST/FC, 2.5mm One-Click Cleaner LC, 1.25mm Cletop - SB white tape	SC, ST, LC	SC, 2.5mm, 1.25mm	2.5mm 1.25mm
M650-100-LP1-H2	Soft and hard cases	SC/LC		SC, ST, LC	SC, 2.5mm, 1.25mm	2.5mm 1.25mm
M650-100-LP1-H3	Soft and hard cases, OFS300-200C	SC/LC		SC, ST, LC	SC, 2.5mm, 1.25mm	2.5mm 1.25mm
M650-100-LP1-H4	Soft and hard cases, charger, spare battery	SC/LC		SC, ST, LC	SC, 2.5mm, 1.25mm	2.5mm 1.25mm
M650-100-LP1-H5	Soft and hard cases	SC/ST	One-Click Cleaner SC/ST/FC, 2.5mm Cletop - SB white tape	SC, ST, LC	SC, 2.5mm, 1.25mm	2.5mm 1.25mm
M650-100-LP1-H6	Soft and hard cases, OFS300-200C	SC/ST		SC, ST, LC	SC, 2.5mm, 1.25mm	2.5mm 1.25mm
M650-100-LP1-H7	Soft and hard cases, charger, spare battery	SC/ST		SC, ST, LC	SC, 2.5mm, 1.25mm	2.5mm 1.25mm
M650-100-LP1-H9	Soft and hard cases, OLS4, OFS300-200C	SC/ST		SC, ST, LC	SC, 2.5mm, 1.25mm	2.5mm 1.25mm

1 (2) each - 150m (62.5µm, 50µm, SM)

M650—100—LP1—H2 (or H5) Kit Contents

ITEM	DESCRIPTION
M650	QUAD OTDR
Adapters	OTDR port — SC, ST, LC OPM port — SC, 1.25 and 2.5mm Universal VFI port — 1.25 and 2.5mm Universal
Fiber Rings (6)	150 m (62.5µm, 50µm, SM)
Miscellaneous Accessories	Stylus pen for touch screen
	USB thumb drive, 1G
	USB to mini-USB cable
	Small plastic parts box (2) to store adapter caps and mandrels
	AC adapters (1), specify country of use
Cleaning Accessories	One-Click Cleaner SC/ST/FC, 2.5mm (H2 and H5 kit)
	One-Click Cleaner LC/MU, 1.25mm (H2 kit only)
	Cletop SB white tape
Cases	Hard transit case — holds M650, and above accessories
	Soft case for M650
Documentation	User guides and quick reference guides
Report Software	PC software and user guide

Optional Accessories

MODEL NUMBER	DESCRIPTION
FR1-SM-150-SC-FC	Fiber ring, single-mode, SC/FC, 150 m
FR1-SM-150-SC-LC	Fiber ring, single-mode, SC/LC, 150 m
FR1-M6-150-SC-ST	Fiber ring, multimode, 62.5µm, SC/ST, 150 m
FR1-M6-150-SC-LC	Fiber ring, multimode, 62.5µm, SC/LC, 150 m
FR1-M5-150-SC-ST	Fiber ring, multimode, 50µm, SC/ST, 150 m
FR1-M5-150-SC-LC	Fiber ring, multimode, 50µm, SC/LC, 150 m
FR1-L5-150-SC-LC	Fiber ring, laser optimized, multimode, 50µm, SC/LC, 150 m
FR1-L5-150-SC-SC	Fiber ring, laser optimized, multimode, 50µm, SC/SC, 150 m
FR1-SM-500-SC-LC	Fiber ring, single-mode, SC/LC, 500 m
FR1-SM-500-SC-SC	Fiber ring, single-mode, SC/SC, 500 m
FR1-SM-500-SC-FC	Fiber ring, single-mode, SC/FC, 500 m
8500-20-0900	Wet Cleaning Kit for SC/FC/ST/LC Connectors
8500-05-0001MZ	One-Click Cleaner SC/ST/FC, 2.5mm
8500-05-0002MZ	One-Click Cleaner LC/MU, 1.25mm
8500-10-0017MZ	Replacement tape for Cletop (white)

Note: 1000 m single-mode fiber rings are also available.

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Continued on the next page

M650 Compact QUAD OTDR

Specifications (All specifications valid at 25°C unless otherwise specified)

OTDR	MULTIMODE	SINGLE-MODE
Emitter Type	Laser	
Safety Class	Class I FDA 21 CFR 1040.10 and 1040.11, IEC 60825-1: 2007-03	
Center Wavelengths	850/1300 nm	1310/1550 nm
Wavelength Tolerance	± 20/30 nm	± 20/30 nm
Dynamic Range (SNR = 1)	22 dB	26 dB
Event Dead Zone [1]	1.5 m	
Attenuation Dead Zone [2]	9 m	
Pulse Widths	10, 30, 100, 300 ns; 1, 3, 10 µs	
Range Settings	250 m to 64 km	250 m to 208 km
Sampling Points	Up to 16,000	
Min. Data Point Spacing	0.25 m	
Group Index of Refraction (GIR)	1.4000 to 1.6000	
Distance Uncertainty (m) [3]	± (1 + 0.005% x distance + data point spacing)	
Linearity	± 0.05 dB/dB (typical)	
Trace File Format	SR-4731 (GR-196-CORE Appendix A & B and SR-4731)	
Trace File Storage Medium	Internal flash memory	
	USB flash drive (2.0)	
	Downloadable from OTDR directly to PC	
Trace File Storage Capacity	Internal > 1000 fibers	
Data Transfer to PC	USB	
OTDR Modes	Full Auto, Expert, Real-Time	
Tool Free adapters	Modular cleanable SC/ST/LC	

1 *Typical distance between the two points 1.5 dB down each side of a reflective spike caused by a -45 dB event using 10 ns pulse width.*
2 *Typical distance from event location to point where trace is within 0.5 dB of backscatter caused by a -45 dB event using 10 ns pulse width.*
3 *Does not include GIR uncertainty.*

VISUAL FAULT LOCATOR	
Emitter Type	Laser
Safety Class	Class II FDA 21 CFR 1040.10 and 1040.11, IEC 60825-1: 2007-03
Wavelength	650 nm
Output Power (nominal)	0.8 mW

POWER METER	
Calibrated Wavelengths	850, 1300 1310, 1490, 1550, 1625 nm (displays up to 3 simultaneously)
Detector Type	InGaAs 2mm
Measurement Range (dBm)	+6 to -60 dBm
Accuracy [1]	±0.25
Measurement Units	dB, dBm, mW
Wavelength ID [2]	Yes
Set Reference	Yes
Data Storage	Yes
Tone Detection	Yes

1 *Accuracy measured at 25ºC and -10 dBm per N.I.S.T. standards.*
2 *Automatic wavelength identification and switching when used with Noyes Wave ID Series Light Sources.*

GENERAL	
Size	27.4 x 19.3 x 7.1 cm (10.8 x 7.6 x 2.8 in)
Weight	2.3 kg (5 lb)
Operating Temperature	-10 to +50°C, 0 to 90% RH (non-condensing)
Storage Temperature	-20 to +60°C, 0 to 90% RH (non-condensing)
Power	Rechargeable Li-Ion or AC power adapter
Battery Life [1]	> 8 hours continuous OTDR testing
Recharge Time [2]	4 hours
Display	16.51 cm (6.5 in), color, transflective

1 *Typical, depending on display brightness.*
2 *Typical, from fully discharged to fully charged state, unit may be operating. External battery charger available.*

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M200 Handheld OTDR

The Noyes M200 from AFL Telecommunications offers unmatched OTDR capabilities in a handheld package weighing less than 1 kg (2 lb). Multimode, Single-mode, and 'Quad' wavelength models are offered. With short dead zone and intermediate range specifications, the M200 is ideal for Tier 2 testing of premises (building and campus) networks or certification and troubleshooting of FTTX PON networks. And its bright, transflective display makes it suitable for both indoor and outdoor operation.

The M200 is based on a new hardware/software platform that supports automatic and manual setup, precision event analysis, dual-wavelength testing, rich file naming and folder setup, 6-hour battery life, internal and removable media data storage, and USB connectivity. Test ports are equipped with tool-free adapters, which can be changed in seconds. A custom-designed polycarbonate case and shock-absorbing boot make it our most rugged OTDR ever.

Results are saved as industry standard .SOR files, which can be viewed, printed, and analyzed on a PC using free-ware available to you and your customers (go to www.afltele.com to download). Unit firmware, user settings, and test results are saved in non-volatile memory. Thus the M200 may be stored with battery removed for an extended period of time and still be up and running in seconds when needed.

New Feature

USB Host Port offers a new convenient way to transfer data from the M200 to a PC. By using a standard USB Flash Drive to transfer traces, the user no longer needs a USB Cable, ActiveSync or a Compact Flash reader. Using the Tools in the M200 File Manager, one or more folders or files can be copied to a USB Flash Drive for transfer to a PC. Thousands of files will fit on a 64 MB or larger USB Flash Drive.

Features

- Handheld, 0.9 kg (2 lb)
- 22 dB (MM), 26 dB (SM) dynamic range
- Integrated VFL (650 nm)
- Tool-free, switchable adapters
- Transflective (indoor/outdoor) touch-screen display
- USB Host and Function Ports

Applications

- Tier 2 testing of premises networks
- FTTX PON certification and troubleshooting
- Fast fault location
- Splice verification
- Network documentation

Ordering Information

MODEL	DESCRIPTION	TEST PORT ADAPTERS
M200-00-0900PR	850/1300nm multimode and 1310/1550nm single-mode OTDR	(1) ST, (2) SC, and (1) FC *
M200-11-0900PR	1310/1550nm single-mode OTDR	SC and FC *
M200-12-0900PR	850/1300nm multimode OTDR	ST and SC *

** LC test port adapters are available (order separately).*

NOTES:

1. All models include a rugged, soft-sided carry case with shoulder strap, 110/220 VAC power adapter with country-specific power cord, and user guide.

2. M200 Standard OTDR supported languages: English, French, German, Italian, Portuguese and Spanish. For Chinese/Taiwanese, Japanese, or Korean models part numbers, please contact Noyes.

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M200 OTDR with standard accessories

M200 OTDR with standard and optional accessories

M200 Handheld OTDR in a Hard Case

The Noyes M200 OTDR is also available in a tough injection molded ABS carrying case. The rugged transit case has a full length hinge, padlock loops, secure snap latches and an O-ring seal to protect the contents from dust and water. In addition to the OTDR, the custom case has room for cleaning products, launch and receive rings, documentation and more. Order the Hard Case alone or with one of the M200 configurations. Add test accessories such as fiber rings and cleaning kits to be ready to clean and test fiber optic networks.

M200 Hard Case Ordering Information

The M200 Hard Case option should be specified when ordering the M200 OTDR. For the M200 OTDR in a Hard Case ordering information, refer to the table below.

MODEL NUMBER	DESCRIPTION
1400-01-0075PZ	Hard Case for M200
M200-00-0903PR	850/1300nm multimode and 1310/1550nm single-mode M200 OTDR in Hard Case
M200-11-0904PR	1310/1550nm single-mode M200 OTDR in Hard Case
M200-12-0902PR	850/1300nm multimode M200 OTDR in Hard Case

NOTE: *Fiber rings and cleaning supplies are not included with the M200 in the Hard Case option, they must be purchased separately. To order fiber rings or cleaning supplies with your M200, refer to the 'Accessories Ordering Information' table below.*

Accessories Ordering Information

MODEL NUMBER	DESCRIPTION
FIBER RINGS	
FR1-M5-150-x1-x2	Standard, 1 fiber, 50/125 µm multimode, 150m
FR1-L5-150-x1-x2	Standard, 1 fiber, Laser Optimized, 50 µm multimode, 150m
FR1-M6-150-x1-x2	Standard, 1 fiber, 62.5/125 µm multimode, 150m
FR1-SM-150-y1-y2	Standard, 1 fiber, single-mode, 150m
CLEANING ACCESSORIES	
8500-20-0900	Wet Cleaning Kit (shown) for SC/FC/ST/LC connectors. Includes: • 8500-10-0016MZ, Cletop-SB. • CCTS-25-0900MZ, Connector Cleaning Tips for 2.5mm ferrule in adapters or sockets (SC, FC, ST in adapters). Blue (40 sticks per tube). Qty = 1 tube • CCTS-12-0900MZ, Connector Cleaning Tips for 1.25mm ferrule in adapters or sockets (LC, MU in adapters). Green (40 sticks per tube). Qty = 1 tube • FCC2-00-0900, optical quality Cleaning Fluid for fiber connector end faces.
8500-20-0901	Dry Cleaning Kit Includes: • 8500-10-0016MZ, Cletop -SB. • 8500-10-0024MZ, ACT-01 2.5mm adapter cleaning tips (Qty = 200).
8500-05-0001MZ	One-Click Cleaner SC
8500-05-0002MZ	One-Click Cleaner LC/MU

NOTE: *When ordering Fiber Rings, specify connector types (x1, x2, y1,y2)*

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M200 Handheld OTDR

Specifications

OTDR SPECIFICATIONS		
	MULTIMODE	**SINGLE-MODE**
Emitter Type	Laser	
Safety Class	Class I FDA 21 CFR 1040.10 and 1040.11, IEC 60825-1:2007-03	
Center Wavelengths	850/1300 nm	1310/1550 nm
Wavelength Tolerance	± 20/± 30 nm	± 20/± 30 nm
Dynamic Range (SNR = 1)	22 dB	26 dB
Event Dead Zone [1]	1.5 m	1.5 m
Attenuation Dead Zone [2]	9 m	9 m
Pulse Widths [3]	10, 30, 100, 300 ns, 1, 3 µs	10, 30, 100, 300 ns, 1, 3, 10 µs
Range Settings	250 m to 32 km	250 m to 208 km
Sampling Points	Up to 16,000	Up to 16,000
Min. Data Point Spacing	0.25 m	
Group Index of Refraction (GIR)	1.4000 to 1.6000	
Distance Uncertainty (m)	± (1 + 0.005% x distance + data point spacing)	
Linearity	± 0.05 dB/dB (typical)	
Trace File Format	Bellcore GR-196 Version 1.1	
Trace File Storage Medium	Internal non-volatile memory, removable Compact Flash Card (not included), and USB Flash Drive	
Trace File Storage Capacity	> 100 internal; thousands on Compact Flash or USB Flash Drive	
Trace File Transfer to PC	USB Flash Drive Type 1.1, Compact Flash or Mini USB Cable with ActiveSync	
VISUAL FAULT LOCATOR SPECIFICATIONS		
Emitter Type	Laser	
Safety Class	Class II FDA 21 CFR 1040.10 and 1040.11; IEC 825-1:1993, 60825-1:2007-03	
Wavelength	650 nm	
Output Power (nominal)	0.8 mW	
GENERAL SPECIFICATIONS		
Size (in boot)	23 x 11 x 7 cm (8.8 x 4.3 x 2.8 inches)	
Weight	0.9 kg (2 lb)	
Operating Temperature	-10 to +50 °C	
Storage Temperature	-20 to +60 °C	
Relative Humidity	0 to 95% RH (non-condensing)	
Power	Removable Li-Ion or 110/220 VAC power adapter	
Battery Life[4]	6 hours	
Recharge Time [4 & 5]	3 hours	

NOTES:

1. Typical distance between the two points 1.5 dB down each side of a reflective spike caused by a -40 dB (Multimode) or -45 dB (single-mode) event using 10 ns pulse width.

2. Typical distance from event location to point where trace is within 0.5 dB of backscatter.

3. 3 µs pulse width not available at 850 nm.

4. New battery.

5. Typical, from fully discharged to fully charged state, unit may be operating.

All specifications are subject to change.

All specifications valid at 23°C ± 2°C (73.4°F ± 3.6°F) unless otherwise specified.

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OFL280 Handheld FTTx OTDR

Applications

- Test dark fibers at up to three wavelengths
- Test live FTTx fibers at 1625 nm
- Measure splice, connection, and end-to-end loss
- Measure connection reflectance
- Measure FTTx downstream power levels at 1490 and 1550 nm
- Troubleshoot splice trays, terminals, and patch panels using the VFL
- Locate fiber 'macro' bends
- Trace fibers up to 5 km using the VFL
- Measure end-to-end loss using the OLS and OPM

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Installation (Live Fiber) and Construction Models

The Noyes OFL280 from AFL Telecommunications is a single-mode OTDR offered in two FTTx-optimized models. The 'installation and repair' model can operate at three wavelengths (1310/1550/1625 nm) on dark fibers but automatically switches to a filtered, 1625 nm only mode if a live fiber is detected. In addition, the test port is equipped with a PON power meter, which allows the OFL280 to detect live FTTx fibers, measure FTTx network power levels, and fault-locate live FTTx fibers with a single OTDR to network connection and a single automated test. A conventional three-wavelength (1310/1490/1550 nm) 'construction' model is also available to certify or fault-locate dark fibers in FTTx or other networks.

Both OFL280 models can operate in Full Auto, Real-Time, or Expert (manual) modes, and offer precision event analysis, an optical power meter, laser source, 12-hour battery life, internal data storage, and USB connectivity. OTDR and OPM test ports are equipped with tool-free adapters, which can be changed in seconds.

Results are saved as industry standard .SOR files, which can be transferred to a PC for viewing, printing, and analyzing with supplied Windows® compatible software.

Features

- Handheld, 0.8 kg (1.7 lb)
- 1.3 m event dead zone
- 30 dB (28 dB @ 1625 nm) dynamic range
- FTTx construction model (OFL280-102) includes:
  – 1310/1490/1550 nm
- FTTx installation model (OFL280-103) includes:
  – 1310/1550/1625 nm
  – PON power meter
  – Live fiber filter at 1625 nm
- OPM, OLS, and VFL (650 nm)
- Internal memory (> 1,000 trace files)
- 3.5-inch, indoor/outdoor LCD display
- 12-hour, rechargeable Li-Ion battery
- USB port for PC connection

Continued on the next page

OFL280 Handheld FTTx OTDR

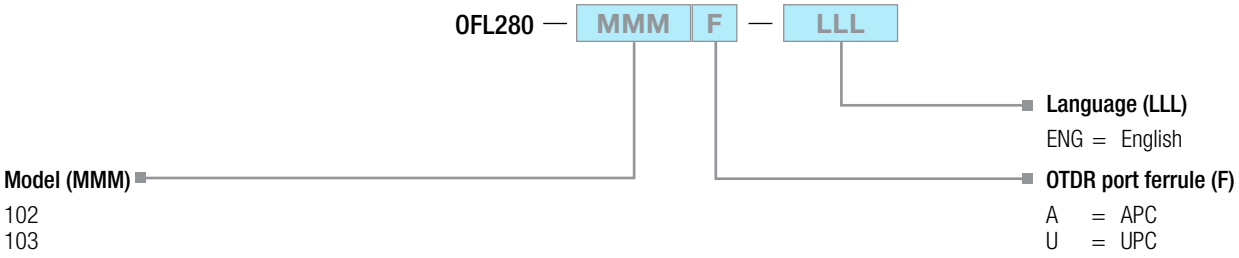
Ordering Information

Two OFL280 models are available as indicated below:

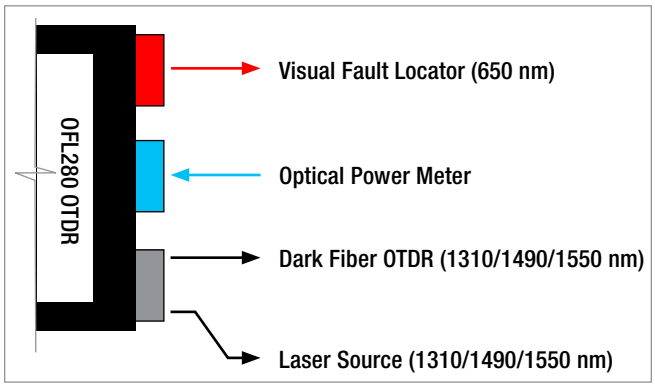
MODEL	WAVELENGTHS	DESCRIPTION
OFL280-102	1310/1490/1550 (nm)	**FTTx construction OTDR** Measures loss at the (3) wavelengths used in FTTx PON networks.
OFL280-103	1310/1550/1625 (nm)	**FTTx installation (live fiber) OTDR** Includes filter to test live FTTx fibers @ 1625 nm, and a PON power meter to measure downstream (1490/1550 nm) power levels on FTTx networks.

Note: *All OFL280 models come with a carry case, (1) SC adapter for the OTDR/OLS port, (1) 2.5 mm Universal adapter for the OPM port, (1) 2.5 mm Universal adapter for the VFL port, USB cable (connects with normal (Type A) USB port on your PC), AC power adapter with a country specific power cord, and a user guide.*

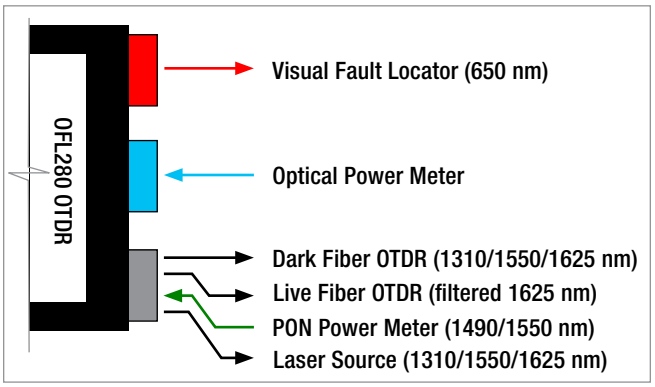
When placing an order, please specify model, OTDR port ferrule type, and language using the following part number format.
Example: OFL280-102U-ENG



OFL280-102 FTTx Construction OTDR



OFL280-103 FTTx Installation OTDR


OFL280 OTDR
Visual Fault Locator (650 nm)
Optical Power Meter
Dark Fiber OTDR (1310/1550/1625 nm)
Live Fiber OTDR (filtered 1625 nm)
PON Power Meter (1490/1550 nm)
Laser Source (1310/1550/1625 nm)

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OFL280 Handheld FTTx OTDR

Specifications (All specifications valid at 25°C unless otherwise specified)

OTDR	
Emitter Type	Laser
Safety Class	Class I FDA 21 CFR 1040.10 and 1040.11, IEC 60825-1: 2007-03
Fiber Type	Single-mode
Available Wavelengths	1310/1490/1550/1625 nm
Wavelength Tolerance	±20/±20/±20/±10 nm
Dynamic Range (SNR=1)	30/30/30/28 dB
Event Dead Zone [1]	1.3 m
Attenuation Dead Zone @ 5ns [2]	Typical 5.0 m, maximum 6.0 m
Pulse Widths	5, 10, 30, 100, 300 ns, 1, 3, 10 µs
Range Settings	250 m to 256 km
Data Points	Up to 16,000
Data Point Spacing	12.5 cm (range ≤ 4 km), Range/16000 (range > 4 km)
Group Index of Refraction (GIR)	1.4000 to 1.6000
Distance Uncertainty (m)	± (1 + 0.005% x distance + data point spacing)
Trace File Format	Bellcore GR-196 V.1.1
Trace File Storage Medium	Internal memory (>1000 traces)
Data Transfer to PC	USB cable
OTDR Modes	Full Auto, End Locate, Expert, Live

1. *Typical distance between the two points 1.5 dB down each side of a reflective spike caused by a -45 dB event using 10 ns pulse width.*
2. *Typical distance from event location to point where trace is within 0.5 dB of backscatter.*

PON POWER METER	
Calibrated Wavelengths	1490, 1550 nm
Detector Type	InGaAs
Isolation	> 40 dB
Measurement Range	+23 to – 50 dBm
Accuracy [1]	± 0.5 dB
Resolution	0.01 dB
Measurement Units	dBm or watts

1. *At calibration wavelengths, and power levels of approximately -5 dBm for 1550 nm and -10 dBm for 1490 nm.*

OPTICAL POWER METER	
Calibrated Wavelengths	1310, 1490, 1550, 1625, 1650 nm
Detector Type	InGaAs
Measurement Range	+23 to - 50 dBm
Tone Detect Range	+3 to -35 dBm
Wavelength ID Range	+3 to -35 dBm
Accuracy [1]	± 0.25 dB
Resolution	0.01 dB
Measurement Units	dBm or watts

1. *At calibration wavelengths, and power level of approximately -10 dBm.*

LASER SOURCE	
Emitter type	Class I FDA 21 CFR 1040.10 and 1040.11, IEC 60825-1: 2007-03
Fiber type	Single-mode
Available Wavelengths (nm)	1310/1490/1550 or 1310//1550/1625
Wavelength Tolerance	± 20, ± 10 nm @ 1625 nm
Spectral Width (FWHM)	5 nm (maximum)
Internal Modulation	1 kHz, 2 kHz, CW
Wavelength ID (one, two, or three wavelengths)	Compatible with Noyes Optical Power Meters and Light Sources
Output Power Stability	< ± 0.25 dB after 15 min
Output Power	– 3 dBm

VISUAL FAULT LOCATOR	
Emitter Type	Laser
Safety Class	Class II FDA 21 CFR 1040.10 and 1040.11, IEC 60825-1: 2007-03
Wavelength	650 nm
Output Power (nominal)	0.8 mW into SMF-28

GENERAL	
Size (in boot)	19 x 11.2 x 4.7 cm (7.5 x 4.4 x 1.9 in)
Weight	0.8 kg (1.7 lb)
Operational Temperature	-10 to +50°C, 0 to 95% RH (non-condensing)
Storage Temperature	-20 to +60°C, 0 to 95% RH (non-condensing)
Power	Rechargeable Li-Ion or AC adapter
Battery Life (backlight ON in OTDR mode)	12 hours
Display	LCD, 320 x 240, 3.5 inch (89 mm), color, transflective
OTDR and OPM Ports	Switchable, see web site or contact AFL for available adapter types

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OFL 250 Handheld OTDR

The Noyes OFL 250 from AFL Telecommunications is a single-mode OTDR with an integrated Optical Power Meter (OPM), Laser Source (OLS), and Visual Fault Locator (VFL) in a handheld package weighing only 0.8 kg (1.7 lb). With short dead zone and mid-range dynamic range performance, the OFL 250 is ideal for testing optical fibers in service provider metro areas and FTTx networks.

The OFL 250 provides automatic and manual setup, precision event analysis, multiple-wavelength testing, a 12-hour battery life, internal data storage, and USB connectivity. OTDR and OPM test ports are equipped with tool-free adapters, which can be changed in seconds.

Results are saved as industry standard .SOR files, which can be transferred to a PC for viewing, printing, and analyzing with the supplied Windows® compatible software.

Features

- Handheld, 0.8 kg (1.7 lb)
- Multiple-wavelength single-mode OTDR
- 1.5 m (typ.) event dead zone
- 26 dB dynamic range
- Integrated OPM, OLS, and VFL (650 nm)
- Tool-free, switchable adapters for OTDR & OPM ports (FC, SC, ST, LC, E2000 are available)
- Bellcore (GR-196) .SOR file format
- Rechargeable (> 12 hours) Li-Ion battery or AC power
- 3.5-inch, indoor/outdoor LCD
- Windows® compatible software to view, print, and archive test record
- Mini USB Port (connect to PC with cable)

Ordering Information

MODEL NUMBER	DESCRIPTION	WAVELENGTHS
OFL2-26-0910PR	OFL 250 Single-mode OTDR	1310/1550 nm
OFL2-26-0924PR	OFL 250 Single-mode OTDR	1310/1550/1625 nm

***NOTE**: All OFL 250 models come with: a carry case, SC and FC adapters for the OTDR/OLS port, 2.5mm Universal adapters for the OPM and VFL ports, USB cable (connects with normal (Type A) USB port on your PC), AC power adapter, country-specific power cord, and a user guide.*

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OFL 250 Handheld OTDR

Specifications

OTDR	
Emitter Type	Laser
Safety Class	Class I FDA 21 CFR 1040.10 and 1040.11, IEC 60825-1: 2007-03
Fiber Type	Single-mode
Center Wavelengths	1310/1550/1625 nm
Wavelength Tolerance	± 20/± 20/± 10 nm
Dynamic Range (SNR=1)	26/26/26 dB
Event Dead Zone [1]	1.5 m
Attenuation Dead Zone @ 5ns [2]	Typ.6.0 m, max. 6.5 m
Pulse Widths	5, 10, 30, 100, 300 ns, 1, 3, 10 µs
Range Settings	250 m to 256 km
Data points	Up to 16,000
Data Point Spacing	12.5 cm (range ≤ 4 km), Range/16000 (range > 4 km)
Group Index of Refraction (GIR)	1.4000 to 1.6000
Distance Uncertainty (m)	± (1 + 0.005% x distance + data point spacing)
Trace File Format	Bellcore GR-196 V.1.1
Trace File Storage Medium	Internal memory (>1000 traces)
Data Transfer to PC	USB cable
OTDR Modes	Full Auto, End Locate, Expert, Live

1. *Typical distance between the two points 1.5 dB down each side of a reflective spike caused by a -45 dB event using 10 ns pulse width.*
2. *Typical distance from event location to point where trace is within 0.5 dB of backscatter.*

OPTICAL POWER METER	
Calibrated Wavelengths	1310, 1490, 1550, 1625 nm
Detector Type	InGaAs
Measurement range	+23 to - 45 dBm
Tone detect range	+3 to -35 dBm
Wavelength ID range	+3 to -35 dBm
Accuracy	± 0.25 dB
Resolution	0.01 dB
Measurement units	dB, dBm, µW, nW

OPTICAL LIGHT SOURCE	
Emitter Type	Class I FDA 21 CFR 1040.10 and 1040.11, IEC 60825-1: 2007-03
Fiber Type	Single-mode
Center Wavelengths	1310 / 1550 / 1625 nm
Wavelength Tolerance	± 20 / ± 20 / ± 10 nm
Spectral Width (FWHM)	5 nm (max)
Internal Modulation	1 kHz, 2 kHz
Wavelength ID	Compatible with Noyes Optical Power Meters & Light Sources
Output Power Stability	< ± 0.25 dB after 15 min
Output Power	– 3 dBm

VISUAL FAULT LOCATOR	
Emitter type	Laser
Safety Class	Class II FDA 21 CFR 1040.10 and 1040.11, IEC 60825-1: 2007-03
Wavelength	650 nm
Output Power (nominal)	0.8 mW into SMF-28

GENERAL	
Size (in boot)	19 x 11.2 x 4.7 cm (7.5 x 4.4 x 1.9 in)
Weight	0.8 kg (1.7 lb)
Operational Temperature	-10 to +50°C, 0 to 95% RH (non-condensing)
Storage Temperature	-20 to +60°C, 0 to 95% RH (non-condensing)
Power	Rechargeable Lilon or AC adapter
Battery life (backlight ON in OTDR mode)	> 12 hours
Display	LCD, 320 x 240, 3.5 inch (89 mm) , color, transflective
OTDR and OPM ports	Switchable. See website or contact AFL for available adapter types.

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Fiber Ring, MM - 150 m

Fiber Ring, SM - 1000 m

Fiber Ring, Laser Optimized

OTDR Fiber Rings

Measuring an insertion loss of the near-end and / or far-end connection of a fiber optic link with an OTDR requires a launch and / or receive test cable. A launch cable, which connects the OTDR to the link under test, reveals the insertion loss and reflectance of the near-end connection. A receive cable, which connects to the far-end of the link, reveals the insertion loss and reflectance of the far-end connection. Launch and receive test cables can range from 150 m to 1 km (or longer) in length. Because very long test cables are impractical to transport and use, Noyes offers coiled lengths of 50 mm multimode, 62.5 mm multimode, or single-mode fiber packaged in compact rings.

Fiber Rings of 150 m of fiber are ideal for premises fiber network test applications. Fiber Rings of 500 m and 1 km of single-mode fiber are designed for broadband, long-haul fiber network test applications.

Fiber Ring Models

MODEL	CONFIGURATION	FIBER TYPE	FIBER LENGTH
FR1-M5-150- x1- x2	Standard, one fiber	Multimode, 50 mm	150 m (492 ft)
FR1-L5-150-x1-x2	Standard, one fiber, Laser Optimized	Multimode, 50 mm	150m (492 ft)
FR1-M6-150- x1- x2	Standard, one fiber	Multimode, 62.5 mm	150 m (492 ft)
FR1-SM-150- y1- y2	Standard, one fiber	Single-mode	150 m (492 ft)
FR1-SM-500- y1- y2	Standard, one fiber	Single-mode	500m (1640 ft)
FR1-SM-1000- y1- y2	Standard, one fiber	Single-mode	1000m (3280 ft)
FR3-M5-x1-MTRJ	MT-RJ near-end, A and B fibers	Multimode, 50 mm	150 m (492 ft)
FR3-M6-x1-MTRJ	MT-RJ near-end, A and B fibers	Multimode, 62.5 mm	150 m (492 ft)
FR3-SM-x1-MTRJ	MT-RJ near-end, A and B fibers	Single-mode	150 m (492 ft)
FR1-M5-x1-E2000	E2000 to ST, SC, FC, etc., one fiber	Multimode, 50 mm	150 m (492 ft)
FR1-M6-x1-E2000	E2000 to ST, SC, FC, etc., one fiber	Multimode, 62.5 mm	150 m (492 ft)
FR1-SM-y1-E2000	E2000 to ST, SC, FC, etc., one fiber	Single-mode	150 m (492 ft)
FR1-M5-E2000-E2000	E2000 to E2000, one fiber	Multimode, 50 mm	150 m (492 ft)
FR1-M6-E2000-E2000	E2000 to E2000, one fiber	Multimode, 62.5 mm	150 m (492 ft)
FR1-SM-E2000-E2000	E2000 to E2000, one fiber	Single-mode	150 m (492 ft)

x1, x2 — connectors for multimode cables, specify type [ST, SC, ASC (angled SC), FC, AFC (angled FC), LC]
y1, y2 — connectors for single-mode cables, specify type [ST, SC, ASC (angled SC), FC, AFC (angled FC), LC]
Other connector types, fiber types, and fiber lengths will be quoted upon request.

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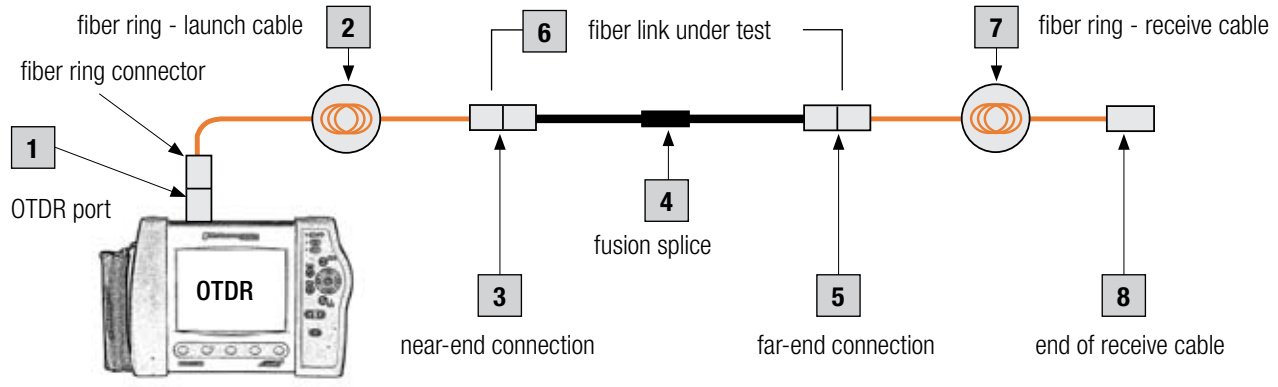
Continued on the next page

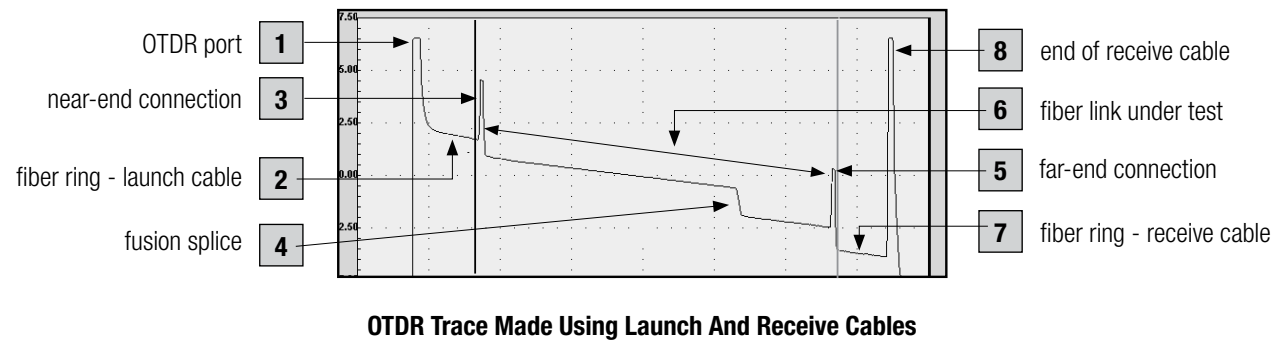
OTDR Fiber Rings

How to Generate a Baseline Trace Using Fiber Rings

- Use the Fiber Ring as a launch cable.
  Connect the Fiber Ring between your OTDR and the fiber link under test. This will allow you to measure the loss of the near-end connection.
- Use the Fiber Ring as a receive cable.
  Cconnect the Fiber Ring to the far-end connector of your fiber link under test. This will allow you measure the loss of the far-end connection.
- By using Fiber Rings as both launch and receive cables, as shown in the diagram below, you can measure total insertion loss of the fiber link under test.



Example OTDR Test Configuration With Launch And Receive Cables



OTDR Trace Made Using Launch And Receive Cables

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C860 QUAD OTDR and Certification Test Kit

The Noyes C860 QUAD Certification and OTDR Test Kit from AFL Telecommunications includes one handheld C840 QUAD OLTS Tester and one C850 QUAD OTDR/OLTS with built-in auto test functionality. With this kit, technicians can troubleshoot and perform both Tier 1 and Tier 2 certification tests of MM and SM fiber networks, store results and create professional test reports.

The C850 is both a QUAD Certification Tester and full-featured QUAD OTDR in a compact case with a large transflective touch screen display suitable for both indoor and outdoor operation. The C850 features single-mode and multimode OTDR capabilities, both single-mode and multimode Optical Light Sources (OLS), Visual Fault Locator (VFL, 650 nm), and an Optical Power Meter (OPM). As an OTDR, the C850 supports Full Auto, Expert (manual) and Real-Time test modes, simultaneous dual and single wavelength testing, and Event and Pass/Fail analysis based on default or user-defined thresholds.

The C840 QUAD Certification Tester includes VFL, OPM, and both single-mode (1310/1550 nm) and multimode (850/1300 nm) OLS. The C840 may be used alone as a traditional power meter or light source to measure fiber loss or as a visual fault locator to find fiber breaks.

Features

- OTDR dynamic range:
  - 22 dB (MM)
  - 26 dB (SM)
- Integrated OPM, OLS, and VFL (650 nm)
- OLS sources:
  - LED - 850/1300 nm
  - Laser - 1310/1550 nm
- Full Auto, Expert, Real-Time OTDR test modes
- Large transflective (indoor/outdoor) touch screen display
- Tool-free, switchable test port adapters
- Rechargeable Li-Ion battery (> 8 hours) or AC power
- USB host and function ports
- Bellcore (GR-196) .SOR file format
- Internal (1000s tests) and USB storage
- Wave ID detect if used with Noyes Wave ID series light sources
- Windows® compatible software

Applications

- Tier 1 and Tier 2 testing of premise networks
- Bi-directional two fibers and single fiber test capable
- Perform Pass/Fail Event and Link measurements
- Find faults using integrated Visual Fault Locator
- Splice verification
- Measure loss and length of fiber links
- Certify fibers using Pass/Fail criteria of industry standards, applications and user-defined thresholds
- Create professional certification reports

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C860 QUAD OTDR and Certification Test Kit

The C840 and C850 can be used together to perform Tier 1 dual wavelength MM (850/1300 nm) and SM (1310/1550 nm) auto loss tests of one or two fibers in one or both directions as well as measure both loss and length of the fibers and compare to industry standards (TIA/ISO/EN), applications and user-defined thresholds values to certify the fibers. Either unit can be identified as the Main or Remote.

The user may test two fibers at two wavelengths bi-directionally and store the results into the main unit. Featuring rich file naming, the Job setup wizard allows the user to define both the cable and fiber end locations, creating easily identifiable trace files, which are managed into Job and Cable folders.

Ordering Information

When placing an order, select options as follows: Model, Optical Configuration, Language, and Case.

Example: C860 — 100 — LP1 — H5

C860 — NNN — LLL — CC

Model

C860

Optical Configuration (NNN)

100 = QUAD 850/1300 nm MM and 1310/1550 nm SM

Case (CC)

H2 = Hard and soft case with SC-LC test and cleaning accessories

H5 = Hard and soft case with SC-ST test and cleaning accessories

Language (LLL)

LP1 = Language Pack: English, German, French, Spanish, Italian, Portuguese

JPN = Japanese/English

CHI = Chinese/Taiwanese/English

RUS = Russian/English

KOR = Korean/English

ARA = Arabic/English

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C860 QUAD OTDR and Certification Test Kit

Ordering Information (continued)

Each kit includes one handheld C840 QUAD Certification Tester, one compact C850 QUAD OTDR/OLTS, USB Flash drive, PC software for OTDR trace analysis and certification or OPM loss reporting, (2) AC adapters, switchable test ports adapters, and accessories (see table below).

MODEL	CARRY CASE	FIBER RINGS[1]	TEST CORDS[2]	ADAPTERS			CLEANING PRODUCTS
				OTDR/OLS	OPM	VFI	
C860-100-LP1-H2	Soft and hard cases	SC/LC	SC/LC	SC, ST, LC	SC, 2.5, 1.25mm	2.5, 1.25mm	One-Click Cleaner SC/ST/FC, 2.5mm One-Click Cleaner LC, 1.25mm Cletop - SB white tape
C860-100-LP1-H5	Soft and hard cases	SC/ST	SC/ST	SC, ST, LC	SC, 2.5, 1.25mm	2.5, 1.25mm	One-Click Cleaner SC/ST/FC, 2.5mm Cletop - SB white tape

1 (2) each - 150m (62.5µm, 50µm, SM)
2 (4) each - 150m (62.5µm, 50µm, SM)

C860—100—LP1—H2 (or H5) Kit Contents

ITEM	DESCRIPTION
C850	QUAD OTDR/Auto Test Certification Tester
C840	QUAD Auto Test Certification Tester
Adapters	OTDR and OLS ports — SC, ST, LC OPM ports — SC, 1.25 and 2.5mm Universal VFI ports — 1.25 and 2.5mm Universal
Fiber Rings (6)	150 m (62.5µm, 50µm, SM)
Jumpers (12)	2 m (62.5µm, 50µm, SM)
Miscellaneous Accessories	Mandrels (2) — 62.5µm, 3mm jacket
	Mandrels (2) — 50µm, 3mm jacket
	Stylus pens for touch screen
	USB thumb drive, 1G
	USB to mini-USB cable
	Small plastic parts box (2) to store adapter caps and mandrels
	AC adapter (2), specify country of use
Cleaning Accessories	(2) One-Click Cleaner SC/ST/FC, 2.5mm
	One-Click Cleaner LC/MU, 1.25mm (H2 kit only)
	Cletop SB white tape
Cases	Hard transit case — holds C850, C840, and above accessories
	Soft case for C850
Documentation	User guides and quick reference guides
Report Software	PC software and user guide

Optional OTDR and Cleaning Accessories

MODEL NUMBER	DESCRIPTION
FR1-SM-150-SC-FC	Fiber ring, single-mode, SC/FC, 150 m
FR1-SM-150-SC-LC	Fiber ring, single-mode, SC/LC, 150 m
FR1-M6-150-SC-ST	Fiber ring, multimode, 62.5µm, SC/ST, 150 m
FR1-M6-150-SC-LC	Fiber ring, multimode, 62.5µm, SC/LC, 150 m
FR1-M5-150-SC-ST	Fiber ring, multimode, 50µm, SC/ST, 150 m
FR1-M5-150-SC-LC	Fiber ring, multimode, 50µm, SC/LC, 150 m
FR1-L5-150-SC-LC	Fiber ring, laser optimized, multimode, 50µm, SC/LC, 150 m
FR1-L5-150-SC-SC	Fiber ring, laser optimized, multimode, 50µm, SC/SC, 150 m
FR1-SM-500-SC-LC	Fiber ring, single-mode, SC/LC, 500 m
FR1-SM-500-SC-SC	Fiber ring, single-mode, SC/SC, 500 m
FR1-SM-500-SC-FC	Fiber ring, single-mode, SC/FC, 500 m
8500-20-0900	Wet Cleaning Kit for SC/FC/ST/LC Connectors
8500-05-0001MZ	One-Click Cleaner SC/ST/FC
8500-05-0002MZ	One-Click Cleaner LC/MU
8500-10-0017MZ	Replacement tape for Cletop (white)

Note: 1000 m single-mode fiber rings are also available.

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C860 QUAD OTDR and Certification Test Kit

Specifications (All specifications valid at 25°C unless otherwise specified)

OTDR	MULTIMODE	SINGLE-MODE
Emitter Type	Laser	
Safety Class	Class I FDA 21 CFR 1040.10 and 1040.11, IEC 60825-1: 2007-03	
Center Wavelengths	850/1300 nm	1310/1550 nm
Wavelength Tolerance	± 20/30 nm	± 20/30 nm
Dynamic Range (SNR = 1)	22 dB	26 dB
Event Dead Zone [1]	1.5 m	
Attenuation Dead Zone [2]	9 m	
Pulse Widths	10, 30, 100, 300 ns; 1, 3, 10 µs	
Range Settings	250 m to 64 km	250 m to 208 km
Sampling Points	Up to 16,000	
Min. Data Point Spacing	0.25 m	
Group Index of Refraction (GIR)	1.4000 to 1.6000	
Distance Uncertainty (m) [3]	± (1 + 0.005% x distance + data point spacing)	
Linearity	± 0.05 dB/dB	

1 *Typical distance between the two points 1.5 dB down each side of a reflective spike caused by a -45 dB event using 10 ns pulse width.*
2 *Typical distance from event location to point where trace is within 0.5 dB of backscatter caused by a -45 dB event using 10 ns pulse width.*
3 *Does not include GIR uncertainty.*

LIGHT SOURCE	MULTIMODE PORT	SINGLE-MODE PORT
Available Wavelengths	850/1300 nm (nominal)	1310/1550 nm (nominal)
Emitter Type	LED	Laser
Safety Class	Class I FDA 21 CFR 1040.10 and 1040.11, IEC 60825-1: 2007-03	
Output Power	> - 20 dBm, 62.5µm MM [1]	0 dBm, 9µm SM
Stability (after 15 minutes warm up)	± 0.1 dB over 1 hour	± 0.07 dB over 1 hour ± 0.15 dB over 8 hours
Wave ID Transmit	Yes	
Tone Generation	270 Hz, 330 Hz, 1 KHz, 2 kHz	

1 *Output power will be approximately 3 dB less if a 50 µm mandrel-wrapped jumper is used instead of a 62.5 µm mandrel-wrapped jumper.*

VISUAL FAULT LOCATOR	
Emitter Type	Laser
Safety Class	Class II FDA 21 CFR 1040.10 and 1040.11, IEC 60825-1: 2007-03
Wavelength	650 nm
Output Power (nominal)	0.8 mW

POWER METER	
Calibrated Wavelengths	850, 1300 1310, 1490, 1550, 1625 nm
Detector Type	InGaAs 2mm
Measurement Range	+6 to -60 dBm
Accuracy [1]	±0.25
Measurement Units	dB, dBm, mW
Wavelength ID [2]	Yes (to -47 dBm)
Set Reference	Yes
Data Storage	Yes
Tone Detection	Yes (to -47 dBm)

1 *Accuracy measured at 25ºC and -10 dBm per N.I.S.T. standards.*
2 *Automatic wavelength identification and switching when used with Noyes Wave ID Series Light Sources.*

GENERAL	C850 OTDR	C840 TESTER
Test Modes	OTDR (Full Auto, Expert, Real-Time), Auto Test, OPM, OLS, VFL	Auto Test, OPM, OLS, VFL
Trace File Format	SR-4731 (GR-196-CORE Appendix A, B; SR-4731)	N/A
Length Measurement Range	5 km (MM); 200 km (SM)	
Data Storage	Internal flash memory	
	USB flash drive (2.0)	
	Downloadable from unit directly to PC	
Data Storage Capacity	Internal > 1000 fibers	
Data Transfer to PC	USB	
Tool Free Adapters	Modular cleanable SC/ST/LC	
Size	27.4 x 19.3 x 7.1 cm (10.8 x 7.6 x 2.8 in)	23 x 11 x 7 cm (8.8 x 4.3 x 2.8 in)
Weight	2.3 kg (5 lb)	0.9 kg (2 lb)
Operating Temperature	-10 to +50°C, 0 to 90% RH (non-condensing)	
Storage Temperature	-20 to +60°C, 0 to 90% RH (non-condensing)	
Power	Rechargeable Li-Ion or AC power adapter	
Battery Life [1]	> 8 hours continuous testing	
Recharge Time [2]	4 hours	
Display	16.51 cm (6.5 in), color, transflective	9.65 cm (3.8 in), color, transflective

1 *Typical, depending on display brightness.*
2 *Typical, from fully discharged to fully charged state, unit may be operating. External battery charger available.*

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FTK Pro Installer Kit

The Noyes FTK Pro Installer Kit from AFL Telecommunications provides a wide selection of fiber optic testing, cleaning, and inspection equipment to enable technicians to install and maintain fiber optic networks. Available with multimode and single-mode test equipment, the kit also includes a broad array of cleaning and inspection equipment in a convenient tough injection-molded ABS carrying case. The Pro Installer Kit is ideal for TIA Tier 1 and Tier 2 testing of premises (building and campus) networks or certification and troubleshooting of FTTx PON networks.

Features

- Clean, inspect, and test fiber optic networks
- Multimode and single-mode fiber ready
- Verify integrity of installed fiber networks
- Software to present network owners with written proof of a quality installation
- Convenient rugged hard carry case

Applications

- Tier 1 and Tier 2 testing of premise networks
- FTTx PON certification and troubleshooting
- Fast fault location
- Splice verification
- Network documentation

Ordering Information

PART NUMBER	DESCRIPTION
FTK1-01-0900PR	See Kit Contents Table

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Kit Contents

ITEM	DESCRIPTION
M200	Quad OTDR, 850/1300 nm MM, 1310/1550 nm SM
OPM5-2D	Optical Power Meter (Wave ID, Set Reference, Data Storage)
OLS4	Optical Light Source (LED and Laser)
OFS300-200	Optical Fiber Scope (200x)
Fiber Rings (1 each)	FR1-L5-150-SC-ST (50/125 OM3 550 Laser Optimized) FR1-L5-150-SC-LC (50/125 OM3 550 Laser Optimized) FR1-L5-150-ST-LC (50/125 OM3 550 Laser Optimized) FR1-M6-150-SC-ST (62.5/125) FR1-M6-150-SC-LC (62.5/125) FR1-M6-150-ST-LC (62.5/125) FR1-SM-150-SC-ST (SM) FR1-SM-150-SC-LC (SM) FR1-SM-150-ST-LC (SM)
Adapters	SC, ST, LC for the OTDR/OLS ports (2 each)
	SC, ST, LC for the OPM Unit
	2.5mm and 1.25mm Universal for OFS and for VFL on OTDR
Jumpers, 2 meters in length (2 each)	SC-ST (50/125 OM3 550 Laser Optimized) SC-LC (50/125 OM3 550 Laser Optimized) SC-ST (62.5/125) SC-LC (62.5/125) SC-ST (SM) SC-LC (SM)
Bulkheads (mating adapters)	SC/SC, ST/ST, LC/LC
Cleaning Supplies	FiberWipes™ Mini-tub
	Cletop -SB with white tape
	Cletop replacement tape (white)
	FCC2 Fiber Connector Cleaner
	Connector Cleaning Tips (for cleaning in sockets): 2.5mm and 1.25mm
	One-Click Cleaner SC/ST/FC
	One-Click Cleaner LC/MU
Miscellaneous Accessories	(2) Mandrels: 62.5µm, 3mm jacket and 50µm, 3mm jacket
	Stylus pen for the M200 touch screen
	USB thumb drive, 1G
	Plastic parts boxes to hold adapters (Qty 3)
	Case to hold up to 12 jumpers (2 – 5 meters in length)
Report Software	Windows® compatible software and user guide

C880 QUAD Certification Test Kit

Combining two C840 Certification Testers, the Noyes C880 QUAD Certification Test Kit from AFL Telecommunications is designed for testing and troubleshooting both multimode and single-mode fiber links. Each tester includes an integrated Visual Fault Locator (VFL, 650 nm), both single-mode (Laser 1310/1550 nm) and multimode (LED 850/1300 nm) Optical Light Sources (OLS), and an Optical Power Meter (OPM). Each tester may be used alone as a traditional power meter, light source or visual fault locator.

In Auto Test mode, the user may perform certification tests to one of the industry cabling standards (TIA, ISO, EN), one or more application standards, or a user-defined loss/length limit. Certification reports may be generated based on the selected standards and rules using PC reporting software. The transflective touch screen display of the C840 tester is suitable for both indoor and outdoor operation. Thousands of test results may be stored internally for transfer to a computer via a USB cable or a standard USB drive. Once test data is transferred to a computer, the supplied Windows® compatible software allows technicians to view, print, and generate professional certification reports.

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Features

- Handheld, 0.9 kg (2 lb)
- Integrated OPM, OLS, and VFL (650 nm)
- OLS sources:
  - LED - 850/1300 nm
  - Laser - 1310/1550 nm
- Dual-wavelength certification Pass/Fail
- Two fibers bi-directional and single fiber testing
- Transflective (indoor/outdoor) touch screen display
- Tool-free, switchable test port adapters
- Rechargeable Li-Ion battery (> 8 hours) or AC power
- USB host and function ports
- Internal (1000s tests) and USB storage
- Windows® compatible software

Applications

- Tier 1 testing of premise networks
- Bi-directionally measure loss and length of fiber links
- Save time simultaneously testing two fibers at two wavelengths
  - MMF 850/1300 nm
  - SMF 1310/1550 nm
- Verify polarity
- Certify SM and MM networks to industry standards (ISO/TIA/EN) and applications
- Find faults using integrated Visual Fault Locator
- Create and test to user defined rules
- Review Pass/Fail feedback after each test
- Review fibers by cable and retest fiber pairs if needed
- Create professional certification reports

Continued on the next page

C880 QUAD Certification Test Kit

Ordering Information

Each C880 kit or C840 kit includes two (2) C840s or one (1) C840 Tester respectively, USB Flash drive, PC software for OTDR trace analysis and certification or OPM loss reporting, AC adapters (two (2) with C880 kit, one (1) with C840 kit), switchable test ports adapters, and accessories (see table below).

MODEL	CARRY CASE	TEST CORDS[2]	ADAPTERS			CLEANING PRODUCTS
			OLS	OPM	VFI	
C880-100-LP1-S1	Soft case	SC/LC	SC, ST, LC	SC, 2.5, 1.25mm	2.5, 1.25mm	One-Click Cleaner SC/ST/FC, 2.5mm One-Click Cleaner LC, 1.25mm
C880-100-LP1-S2	Soft case	SC/ST	SC, ST, LC	SC, 2.5, 1.25mm	2.5, 1.25mm	One-Click Cleaner SC/ST/FC, 2.5mm
C840-100-LP1-S1	Soft case	—	SC, ST, LC	SC, 2.5, 1.25mm	2.5, 1.25mm	One-Click Cleaner SC/ST/FC, 2.5mm

C880–100–LP1–S1 (or S2) C880 Kit Contents

ITEM	DESCRIPTION
C840	QUAD Auto Test Certification Tester (2 ea)
Adapters	OLS Ports — SC, ST, LC OPM port — SC, 1.25 and 2.5mm Universal VFI port — 1.25 and 2.5mm Universal
Jumpers (12)	2 m (62.5 µm, 50 µm, SM)
Miscellaneous Accessories	Mandrels (2) — 62.5µm, 3mm jacket
	Mandrels (2) — 50µm, 3mm jacket
	Stylus pens for touch screen
	USB thumb drive -1G, USB to mini-USB cable
	AC adapters (2), specify country of use
Cleaning Accessories	(2) One-Click Cleaner SC/ST/FC, 2.5mm (S1 and S2 kit)
	One-Click Cleaner LC/MU, 1.25mm (S1 kit only)
Cases	Soft case (2)
Report Software	PC software and user guide

Optional Cleaning Accessories

MODEL NUMBER	DESCRIPTION
8500-20-0900	Wet Cleaning Kit for SC/FC/ST/LC Connectors
8500-05-0001MZ	One-Click Cleaner SC/ST/FC
8500-05-0002MZ	One-Click Cleaner LC/MU
8500-10-0017MZ	Replacement tape for Cletop (white)

When placing an order, select options as follows: Model, Optical Configuration, Language, and Case.

Example: C880 – 100 – LP1 – S1

C880 — NNN — LLL — CC

Model
C880

Optical Configuration (NNN)
100 = QUAD 850/1300 nm MM and 1310/1550 nm SM

Case (CC)
S1 = Soft case for C840 (two units) with SC-LC test and cleaning accessories
S2 = Soft case for C840 (two units) with SC-ST test and cleaning accessories

Language (LLL)
LP1 = Language Pack: English, German, French, Spanish, Italian, Portuguese
JPN = Japanese/English
CHI = Chinese/Taiwanese/English
RUS = Russian/English
KOR = Korean/English
ARA = Arabic/English

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C880 QUAD Certification Test Kit

Specifications (All specifications valid at 25°C unless otherwise specified)

GENERAL	
Test Modes	Auto Test, OPM, OLS, VFL
Length Measurement Range	5 km (MM); 200 km (SM)
Data Storage	Internal flash memory
	USB flash drive (2.0)
	Downloadable from unit directly to PC
Data Storage Capacity	Internal > 1000 fibers
Data Transfer to PC	USB
Tool Free Adapters	Modular cleanable SC/ST/LC
Size	23 x 11 x 7 cm (8.8 x 4.3 x 2.8 in)
Weight	0.9 kg (2 lb)
Operating Temperature	-10 to +50°C, 0 to 90% RH (non-condensing)
Storage Temperature	-20 to +60°C, 0 to 90% RH (non-condensing)
Power	Rechargeable Li-Ion or AC power adapter
Battery Life [1]	> 8 hours continuous testing
Recharge Time [2]	4 hours
Display	9.65 cm (3.8 in), color, transflective

1 Typical, depending on display brightness.
2 Typical, from fully discharged to fully charged state, unit may be operating. External battery charger available.

POWER METER	
Auto Test Wavelengths	850/1300 nm (MM), 1310/1550 nm (SM)
Detector Type	InGaAs 2mm
Measurement Range	+6 to -60 dBm
Accuracy [1]	±0.25
Measurement Units	dB, dBm, mW
Wavelength ID [2]	Yes (to -47 dBm)
Set Reference	Yes
Data Storage	Yes
Tone Detection	Yes (to -47 dBm)

1 Accuracy measured at 25ºC and -10 dBm per N.I.S.T. standards.
2 Automatic wavelength identification and switching when used with Noyes Wave ID Series Light Sources.

VISUAL FAULT LOCATOR	
Emitter Type	Laser
Safety Class	Class II FDA 21 CFR 1040.10 and 1040.11, IEC 60825-1: 2007-03
Wavelength	650 nm
Output Power (nominal)	0.8 mW

LIGHT SOURCE	MULTIMODE PORT	SINGLE-MODE PORT
Available Wavelengths	850/1300 nm (nominal)	1310/1550 nm (nominal)
Emitter Type	LED	Laser
Safety Class	Class I FDA 21 CFR 1040.10 and 1040.11, IEC EN60825-1: 2007-03	
Output Power	> - 20 dBm, 62.5 µm MM [1]	0 dBm, 9 µm SM
Stability (after 15 minutes warm up)	± 0.1 dB over 1 hour	± 0.07 dB over 1 hour ± 0.15 dB over 8 hours
Wave ID Transmit	Yes	
Tone Generation	270 Hz, 330 Hz, 1 KHz, 2 kHz	

1 Output power will be approximately 3 dB less if a 50 µm mandrel-wrapped jumper is used instead of a 62.5 µm mandrel-wrapped jumper.

NOYES Test & Inspection
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NOYES TurboTest 500B Loss Test Set has been discontinued

Turbotest 500B
Optical Loss/Return Loss Test Sets

The Turbotest 500B Series offers the latest technology in a single fiber bi-directional loss and return loss testing. The T500B is a handheld fiber optic test and measurement instrument. It performs Optical Power, Optical Return Loss, and Optical Loss measurements. Five compact models are available, including the three wavelength (1310/1550/1625) T506B and (1310/1550/1490) T506B-FTTH. An optional dedicated digital talk option is available for full time/full duplex communication between test operators while testing other fibers in a bundle.

The T500B can store up to 1000 records (40 files) in any combination of its four operating modes and if any configuration other than TRIPLE wavelength is selected. If the configuration is TRIPLE wavelength, the T500B can store up to 500 records (40 files). Stored test results can be transferred to a PC for a complete report generation.

Powered by an internal rechargeable Lithium-Ion battery, the T500B comes with protective rubber boots, PC software and manual, AC adapter/charger, RS-232 serial cable, APC/UPC reference cable, adapter cap, mandrel, screwdriver, hex screwdriver, warranty registration card, user's guide, and carry case.

Features

- Rugged, handheld, designed for field use
- Passive Optical Networks (PON) testing
- Single fiber, bi-directional loss and return loss testing at 1310/1490/1550 nm or 1310/1550/1625 nm
- TRIPLE wavelength test mode
- Talk Set option
- Up to 1000 test records (40 files) storage and download
- Free Windows® compatible software to view, print, and archive test records
- Lithium-Ion or AC adapter
- Cost-effective, easy to use

Ordering Information

MODEL	INCLUDES
All T500B models	(1) T500B, protective rubber boot, APC/UPC test jumper, adapter cap, serial cable, hex driver, screwdriver, mandrel, AC adapter, PC software, user's guide, and carry case.

When ordering, specify connector type after the model number, (e.g. T504B-Y-SC is a 1310/1550/ Turbo with 1550 nm Talk Set Option and a SC connector).

NOYES Test & Inspection

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Specifications

MODEL	T503B	T504B	T505B	T506B	T506B-FTTH
Calibrated wavelengths (nm)	1310, 1550	1310, 1550	1550, 1625	1310, 1550, 1625	1310, 1550, 1490
Output power (dBm)	-5	-5	-5	-5	-5
Emitter type	Laser	Laser	Laser	Laser	Laser
Safety class	Class I FDA 21 CFR 1040.10 and 1040.11, IEC 60825-1: 2007-03				
Detector type	InGaAs	InGaAs	InGaAs	InGaAs	InGaAs
Insertion loss measurement range (dB)	45	45	45	45	45
Measurement range (dBm)	+6 to -70	+26 to -50	+26 to -50	+26 to -50	+26 to -50
Measurement units	dB, dBm, µW				
ORL dynamic range (dB)	65				
Available connector types	ASC or AFC				
Power	Lithium-Ion or AC Adapter				
Li-Ion battery pack charging temp.	-10 to +45°C				

Li-Ion battery pack charging time will increase by 25% at a temperature below -5°C.
Do not charge the Li-Ion battery pack at a temperature above +45°C.
After the model number:
Add -T for 40 dB 1310 nm Talk Set option.
Add -Y for 40 dB 1550 nm Talk Set option.
Example: T506B-Y is 1310/1550/1625 Turbo with 1550nm Talk Set option.
T500B instruments are sold individually but normally used in pairs

OLTS 5 Optical Loss Test Set

The OLTS 5 Optical Loss Test Set series offers end-to-end single-mode testing at either 1310/1550 nm or 1550/1625 nm. The OLTS 5 may be operated in automatic or manual test modes. In its "two-unit" automatic test mode, a pair of OLTS 5 test sets may be used to measure the end-to-end, bi-directional insertion loss of a pair of single-mode fibers at 1310/1550 nm or 1550/1625 nm. Tests are started and controlled by the user from the OLTS 5 configured as the Main unit. Test progress messages and results are displayed on the Remote unit. Full test results can be reviewed and saved in the Main unit. Thresholds may be set to provide Pass/Fail results. In its "single-unit" automatic test mode the OLTS 5 can measure bi-directional, dual-wavelength insertion loss of patch cords, or fiber optic cables while they are still on the reel. In the manual operating mode individual OLTS 5 test sets can operate either as an optical power meter (OPM) or dual-wavelength laser source.

The OLTS 5 can store dual-wavelength, bi-directional insertion loss results for up to 1,000 fibers. Test results can be organized in up to 20 user-named files. Results are transferred to a PC using the supplied serial cable or RS232 / USB adapter. Windows® compatible software is provided to view, edit, and print test results. OLTS 5 units are sold individually but normally used in pairs.

Features

- Handheld, rugged, lightweight
- Integrated dual-wavelength laser source and optical power meter
- Automatic bi-directional, dual-wavelength insertion loss measurement
- Optical power meter and light source manual test modes
- Up to 1000 test records storage
- Free Windows® compatible software to view, print, and archive test records
- 2 AA alkaline. Optional internally recharged NiMH battery pack or AC
- Cost-effective, easy to use

Ordering Information

MODEL	INCLUDES
All OLTS 5 models	(1) OLTS 5, (2) AA alkaline batteries, protective rubber boot, PC software, adapter cap of the same connector type as the transmit port, user's guide, and carry case.

When ordering, connector type after the model number, for example OLTS 5-3 SC.

Specifications

MODEL	OLTS 5-3	OLTS 5-5	OLTS 5-6
TRANSMIT PORT (LASER SOURCE) SPECIFICATIONS			
Center wavelengths	1310/1550 ± 20 nm	1550/1625 ± 20 nm	1310/1550 ± 20 nm
Emitter type	Laser, Class I FDA 21 CFR 1040.10 and 1040.11, IEC 60825-1: 2007-03		
Output power into 9/125 SM fiber	-5 dBm (nominal)	-5 dBm (nominal)	-5 dBm (nominal)
Stability	± 0.1 dB, up to 8 hours	± 0.1 dB, up to 8 hours	± 0.1 dB, up to 8 hours
Insertion loss and power measurement resolution	0.01 dB	0.01 dB	0.01 dB
Available connector types	SC, FC, ST	SC, FC, ST	SC, FC, ST
RECEIVE PORT (OPTICAL POWER MEASUREMENT) SPECIFICATIONS			
Detector type	InGaAs	InGaAs	Filtered InGaAs
Calibrated wavelengths	850, 980, 1300, 1310, 1480, 1550, 1625 nm		
OPM (manual) mode optical power display range	+ 10 to – 70 dBm	+ 10 to – 70 dBm	+ 16 to – 60 dBm
OLTS (automatic) mode insertion loss measurement range	45 dB	45 dB	39 dB
Accuracy at –10 dBm, 25ºC	± 0.25 dB	± 0.25 dB	± 0.25 dB
GENERAL SPECIFICATIONS			
Display	128 X 64 dot matrix liquid crystal display		
Dimensions (H x W x D)	18.5 X 11.1 X 4.6 cm (7.3 X 4.4 X 1.8 in)		
Weight	0.55 kg (1.2 lb)		
Operating temperature and humidity	0 to +50°C, 90% RH (non-condensing)		
Storage temperature and humidity	-20 to +60°C, 95% RH		
Power	2 AA (2-cell NiMH or AC optional)		
Battery life (typical)	(2) AA - 17 hours; NiMH battery pack - 11 hours		
Connector types	Thread-on adapter cap mount		

All specifications valid at 25°C unless otherwise specified.

NOYES Test & Inspection
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ORL3B Optical Return Loss Test Set

The ORL3B is a handheld fiber optic test and measurement instrument that offers two modes of testing. It performs optical return loss measurements (ORL mode) and operates as an optical power meter (OPM mode).

The ORL3B can store up to 1000 records (40 files) in any combination of its two operating modes. With the supplied PC software, saved test results can be transferred to a PC for storage, printing, and analysis. The ORL3B operates from an internal rechargeable Lithium-Ion battery pack or external AC power adapter.

Features

- Rugged, handheld, designed for field use
- Provides 850/1300 nm Return Loss and OPM testing
- Up to 1000 test records (40 files) storage and download
- Free Windows® compatible software to view, print, and archive test records
- Li-Ion or AC adapter
- Cost-effective, easy to use

Specifications

MODEL	ORL3-MM
ORL SPECIFICATIONS	
Calibrated wavelengths (nm)	850, 1300
Output power (dBm)	-20
Emitter type	LED
Safety class	Class I FDA 21 CFR 1040.10 and 1040.11, IEC 60825-1: 2007-03
ORL dynamic range (dB)	40
Measurement units	dB, dBm, µW
Available connector types	ASC
OPM SPECIFICATIONS	
Calibrated wavelengths (nm)	850, 1300,
Detector type	InGaAs
Measurement range (dBm)	+6 to -70
Resolution	0.01 dB
Accuracy @ -10 dBm @ 25°C	± 0.25 dB
Measurement units	dB, dBm, µW
GENERAL SPECIFICATIONS	
Display type	128 X 64 dot matrix liquid crystal display, with LED backlight
Dimensions, without boot (H x W x D)	19.5 X 10.1 X 5.7 cm (7.67 X 3.97 X 2.25 in)
Weight, without boot	0.907 kg (2 lb)
Operating temperature	0 to +50°C, 90% RH (non-condensing)
Storage temperature	-20 to +60°C, 95% RH
Power	Lithium-Ion or AC Adapter
Battery life (typ.)	32 hours
Li-Ion battery pack charging temp.	-10 to +45°C

Li-Ion battery pack charging time will increase by 25% at a temperature below -5°C.
Do not charge the Li-Ion battery pack at a temperature above +45°C.

Ordering Information

MODEL	INCLUDES
ORL3-MM	(1) ORL3B, protective rubber boot, PC software, adapter cap of the same connector type as the transmit port, user's guide, and carry case.

When ordering, specify transmit port connector type after the model number, for example ORL3-MM-SC.

NOYES Test & Inspection
A Division of **AFL Telecommunications**

OPM4-FTTx PON Power Meter

The Noyes OPM4-FTTx from AFL Telecommunications is designed to measure optical power in FTTH and other passive optical networks (PONs) that use 1490 nm for downstream data and 1550 nm for downstream video traffic. In addition, the OPM4-FTTx provides an integrated Visual Fault Locator (VFL) - 650 nm (red) laser for short-range fault location and connectivity testing.

Equipped with wavelength filters and a dual photo detector, the OPM4-FTTx can separately and simultaneously measure 1490 and 1550 nm power at the ONT or other points in an FTTx PON. A large, dual-wavelength LCD display with backlight shows power at both wavelengths in units of dBm or µW. The "set reference" feature may be used to measure the difference between two power (dBm) levels, in units of dB measured at different parts of the network.

The power meter and VFL ports accept Noyes thread-on style adapter caps and are compatible with angled or non-angled connectors. The OPM4-FTTx offers an automatic power shut-off feature, long battery life from standard AA alkaline batteries, and is fully N.I.S.T. traceable.

Features

- BPON, GPON, and EPON compatible
- Simultaneous power measurement at 1490 and 1550 nm
- Power shown in units of dBm or µW
- Comparison of power levels in dB
- Integrated VFL
- Auto power shut-off feature
- Dual-wavelength, sunlight readable LCD display
- Compatible with APC or UPC connectors
- Standard alkaline AA batteries
- Handheld, rugged, lightweight
- N.I.S.T traceable

Applications

- ONT splitter installation testing
- Fault-locating drop cables and F2 fibers from FDH to ONT

Specifications

POWER METER	
Calibrated wavelengths	1490 nm, 1550 nm
Signal format	CW or downstream BPON, GPON, or EPON
Detector type	Filtered InGaAs
Measurement range	+10 to -50 dBm @ 1490 nm; +20 to -50 dBm @ 1550 nm
Accuracy*	± 0.5 dB (± 0.35 dB typical)
Resolution	0.01 dB
Measurement units	dB, dBm, µW
VFL LASER	
Output power (typical)	0.8 mW
Wavelength (nominal)	650 nm
Safety	Class II, FDA 21 CFR 1040.10 & 1040.11, IEC 60825-1:2007
GENERAL	
Power	2 x AA batteries
Battery life (typical)	Power meter: 100 hours; Power meter (backlight on): 16 hours Power meter + VFL: 16 hours; Power meter (backlight on) + VFL: 5 hours
Operating temperature	-10 to 50°C, 90% RH (non-condensing)
Storage temperature	-30 to 60°C, 90% RH (non-condensing)
Size (H x W x D)	14.0 x 8.1 x 3.8 cm (5.5 x 3.2 x 1.5 in)
Weight	0.26 kg (0.58 lb)

* *At calibration power levels of approximately -5 dBm for 1550 nm and -10 dBm for 1490 nm. All specifications at 25°C*

Ordering Information

MODEL	INCLUDES
OPM4-FTTx	OPM4-FTTx PON power meter, 2 x AA batteries, protective rubber boot, SC adapter for power meter port, 2.5 mm universal adapter for VFL port, user's guide, and carry case.

* *Additional adapters are available and must be ordered separately*

NOYES Test & Inspection
A Division of **AFL Telecommunications**

OPM5 Optical Power Meter

The OPM5 from AFL Telecommunications is a full-featured, handheld optical power meter designed for measuring optical power in Premises, Telco, or Broadband networks and for performing insertion loss measurements on multimode or single-mode fiber optic links.

The OPM5 features automatic wavelength identification and switching (Wave ID) when used with Noyes OLS series light sources, multiple test Tone detection for fiber identification, and stores optical references for each calibrated wavelength and up to 500 records per wavelength of power or insertion loss measurements. Using the supplied Windows® compatible software and USB connection, test records are transferred to a PC for analysis, printing, and storage. A large dual-wavelength LCD display with backlight shows measured power [dBm or µW] or insertion loss [dB], calibrated wavelengths [nm], tone signal [Hz], wavelength ID, and estimated remaining battery life.

The OPM5 optical input port accepts a variety of Noyes thread-on style adapter caps (ordered separately) to meet a wide range of testing requirements. The OPM5 offers a five-minute auto-off feature and long battery life from common AA alkaline batteries with external AC adapter available as an option.

The OPM5 is fully N.I.S.T. traceable.

Features

- Handheld, rugged, lightweight
- Multimode or single-mode applications
- Wave ID (auto identification & switching)
- Multiple-wavelength testing
- 270Hz, 330Hz, 1kHz, 2kHz Tone detection
- Large LCD with backlight
- Power measurements in dBm or µW; insertion loss in dB
- Reference power level storage
- Up to 500 records per wavelength storage
- USB port for download of stored records
- Windows® compatible software to view, print, and archive stored records
- Automatic power-off function
- Battery gauge
- Long battery life with 2 x AA alkaline, optional AC adapter
- N.I.S.T traceable

Applications

- Premises (Ge), Telco (InGaAs), and Broadband (+26 dBm) models
- Passive Optical Networks (PON) testing

NOYES Test & Inspection
A Division of **AFL Telecommunications**

Specifications

OPTICAL	**OPM5-2D**	**OPM5-3D**	**OPM5-4D**
Calibrated wavelengths	850, 1300, 1310, 1490, 1550 nm	850, 1300, 1310, 1550, 1490, 1625 nm	850, 980, 1310, 1490, 1550, 1625 nm
Detector type	Germanium (Ge)	InGaAs	Filtered InGaAs
Measurement range	+6 to -60 dBm	+10 to -75 dBm	+26 to -50 dBm
Tone detect range	+6 to -50 dBm +6 to -45 dBm for 850nm	+10 to -50 dBm +10 to -45 dBm for 850nm	+6 to -30 dBm +6 to -25 dBm for 850nm
Wavelength ID range	+6 to -50 dBm +6 to -45 dBm for 850 nm	+10 to -50 dBm +10 to -45 dBm for 850 nm	+6 to -30 dBm +6 to -25 dBm for 850 nm
Accuracy*	± 0.25 dB		
Resolution	0.01 dB		
Measurement units	dB, dBm, µW		
GENERAL			
Power	2 x AA batteries, optional AC adapter		
Battery life	300 hours		
Operating temperature	-10 to 50°C, 90% RH (non-condensing)		
Storage temperature	-30 to 60°C, 90% RH (non-condensing)		
Size (H x W x D)	14.0 x 8.1 x 3.8 cm (5.5 x 3.2 x 1.5 in)		
Weight	0.26 kg (0.58 lb)		

* *Accuracy measured at 25ºC and -10 dBm per N.I.S.T. standards.*
All specifications at 25°C

Ordering Information

MODEL	**INCLUDES**
All OPM5 models	OPM5 optical power meter, 2 x AA batteries, protective rubber boot, USB cable, Windows® compatible software and user's guide, OPM5 user's guide, and carry case.

OPM4 Optical Power Meter

The Noyes OPM4 from AFL Telecommunications is a handheld optical power meter designed for measuring optical power in Premises, Telco, or Broadband networks and for performing insertion loss measurements on multimode or single-mode fiber optic links.

The OPM4 features automatic wavelength identification and switching (Wave ID) when used with Noyes OLS series light sources, multiple test Tone detection for fiber identification, and stores optical references for each calibrated wavelength. A large dual-wavelength LCD display with backlight shows measured power [dBm or µW] or insertion loss [dB], calibrated wavelengths [nm], tone signal [Hz], wavelength ID, and estimated remaining battery life.

The OPM4 optical input port accepts a variety of Noyes thread-on style adapter caps (ordered separately) to meet a wide range of testing requirements. The OPM4 offers a five-minute auto-off feature and long battery life from common AA alkaline batteries.

The OPM4 is fully N.I.S.T. traceable.

Features

- Handheld, rugged, lightweight
- Multimode or single-mode applications
- Wave ID (auto identification & switching)
- Multiple-wavelength testing
- 270Hz, 330Hz, 1kHz, 2kHz Tone detection
- Large LCD with backlight
- Power measurements in dBm or µW; insertion loss in dB
- Reference power level storage
- Automatic power-off function
- Battery gauge
- Long battery life with 2 x AA alkaline
- N.I.S.T traceable

Applications

- Premises (Ge), Telco (InGaAs), and Broadband (+26 dBm) models
- Passive Optical Networks (PON) testing

Specifications

OPTICAL	OPM4-1D	OPM4-2D	OPM4-3D	OPM4-4D
Calibrated wavelengths	660, 780, 850 nm	850, 1300, 1310, 1490, 1550 nm	850, 1300, 1310, 1490, 1550, 1625 nm	850, 980, 1310, 1490, 1550, 1625 nm
Detector type	Silicon (Si)	Germanium (Ge)	InGaAs	Filtered InGaAs
Measurement range	+6 to -70 dBm	+6 to -60 dBm	+10 to -75 dBm	+26 to -50 dBm
Tone detect range	+6 to -45 dBm	+6 to -50 dBm +6 to -45 for 850 nm	+10 to -50 dBm +10 to -45 for 850 nm	+6 to -30 dBm +6 to -25 for 850 nm
Wavelength ID range	—	+6 to -50 dBm +6 to -45 dBm for 850 nm		+6 to -30 dBm +6 to -25 dBm for 850 nm
Accuracy*	± 0.25 dB			
Resolution	0.01 dB			
Measurement units	dB, dBm, µW			
GENERAL				
Power	2 x AA batteries			
Battery life	300 hours			
Operating temperature	-10 to 50°C, 90% RH (non-condensing)			
Storage temperature	-30 to 60°C, 90% RH (non-condensing)			
Size (H x W x D)	14.0 x 8.1 x 3.8 cm (5.5 x 3.2 x 1.5 in)			
Weight	0.26 kg (0.58 lb)			

* *Accuracy measured at 25ºC and -10 dBm per N.I.S.T. standards.*
All specifications at 25°C

Ordering Information

MODEL	INCLUDES
All OPM4 models	OPM4 optical power meter, 2 x AA batteries, protective rubber boot, user's guide, and carry case.

NOYES Test & Inspection
A Division of **AFL Telecommunications**

OPM1 Optical Power Meter

This portable optical power meter may be used to measure optical power in premises, telco, or broadband fiber optic networks. When used with an LED or laser light source, the OPM1 can also measure the attenuation (insertion loss) of multimode or single-mode cables. With only two controls – ON/OFF and wavelength – the OPM1 is our simplest to use optical power meter. Optical power in dBm and the calibration wavelength setting are displayed on an easy-to-read LCD display. The optical input port accepts Noyes thread-on style connector adapter caps. Adapter caps are required and must be ordered separately. The OPM1 is fully N.I.S.T. traceable and runs on a standard 9-volt alkaline battery.

Features

- 850, 1300, 1310, 1550 nm
- Premises (Ge) and broadband (InGaAs) models
- Displays optical power (dBm)
- Our simplest to use optical power meter
- N.I.S.T. traceable

Applications

- The OPM1-2C is calibrated at 850, 1300, 1310, and 1550 nm for testing LAN, Ethernet, FDDI, Token Ring, and single-mode fiber systems such as Telco, WAN, and CATV.
- The OPM1-3C also operates at 850, 1300, 1310, and 1550 nm but offers greater temperature stability needed for outside plant 1550 nm testing as with WAN, CATV, and Telco systems.

Specifications

Optical Specifications	OPM1-2C	OPM1-3C
Calibration wavelengths	850, 1300, 1310, 1550 nm	850, 1300, 1310, 1550, 1625 nm
Detector type	Germanium (Ge)	InGaAs
Measurement range	+6 to -60 dBm	+6 to -70 dBm
Accuracy (@25° C, -10.0 dBm)	±0.25 dB	
Measurement units	dBm	

General Specifications	
Power	Typical 60 hours with 9V battery
Adapter caps	order separately (ST, SC, FC, and others available)
Operating temperature	-10 to 50°C
Relative humidity	0 to 95% (non-condensing)
Storage temperature	-30 to 60°C
Size (H x W x D)	5.5 x 3.2 x 1.5 in (14.0 x 8.1 x 3.8 cm)
Weight	0.58 lb (0.26 kg)

All specifications at 25°C

Ordering Information

Model	Includes
All OPM1 models	Protective rubber boot, 9V battery, manual, and carrying case.

Optical power meters and optical light sources can be packaged together as a kit.

NOYES Test & Inspection
A Division of AFL Telecommunications

CSM1 Contractor Series Optical Power Meter

The Noyes CSM1 from AFL Telecommunications is a palm-sized, cost-effective optical power meter designed for measuring optical power in Premises, Telco, or Broadband fiber optic networks and for performing insertion loss measurements on multimode or single-mode fiber optic links. Weighing only 0.4 lb, this power meter is ideal for field use.

The CSM1 stores optical references for each calibrated wavelength and features multiple test Tone detection for fiber identification. A large LCD display with backlight shows measured power [dBm or µW] or insertion loss [dB], calibrated wavelengths [nm], tone frequency [Hz], and indicates a low battery condition.

The CSM1 optical input port accepts a variety of Noyes thread-on style adapter caps (ordered separately) to meet a wide range of testing requirements. One adapter cap, 2.5mm Universal, is included.

Being powered by two AA alkaline, the CSM1 offers a five-minute auto-off feature and over 300 hours of operation with backlight off.

The CSM1 is fully N.I.S.T. traceable.

Features

- Palm-sized, rugged, lightweight
- Multimode or single-mode applications
- 270, 330, 1000, 2000 Hz Tone detection
- Large LCD with backlight
- Power measurements in dBm or µW; insertion loss in dB
- Reference power level storage
- Automatic power-off function
- Battery gauge
- Long battery life with 2 x AA alkaline
- Cost-effective, easy to use
- N.I.S.T traceable

Application

- Premises (Ge), Telco (InGaAs), and Broadband (+26 dBm) models
- Passive Optical Networks (PON) testing

Specifications

OPTICAL	CSM1-1	CSM1-2	CSM1-3	CSM1-4
Calibrated wavelengths	660, 780, 850 nm	850, 1300, 1310, 1550 nm	850, 1300, 1310, 1490, 1550, 1625 nm	850, 980,1310, 1490, 1550, 1625 nm
Detector type	Silicon (Si)	Germanium (Ge)	InGaAs	Filtered InGaAs
Measurement range	+6 to -70 dBm	+6 to -60 dBm	+6 to -70 dBm	+26 to -50 dBm
Tone detect range	+6 to -45 dBm	+6 to -50 dBm +6 to -45 dBm for 850 nm		+6 to -30 dBm +6 to -25 dBm for 850 nm
Accuracy*	± 0.3 dB			
Resolution	0.01 dB			
Measurement units	dB, dBm, µW			
GENERAL				
Power	2 x AA batteries			
Battery life	> 300 hours			
Operating temperature	-10 to 50°C, 90% RH (non-condensing)			
Storage temperature	-30 to 60°C, 90% RH (non-condensing)			
Size (H x W x D)	11.4 x 6.4 x 3.2 cm (4.5 x 2.5 x 1.3 in)			
Weight	0.18 kg (0.4 lb)			

**Accuracy measured at 25ºC and -10 dBm per N.I.S.T. standards.*
All specifications at 25°C

Ordering Information

MODEL	INCLUDES
All CSM1 models	2.5mm Universal adapter cap, 2 x AA batteries, user's guide, and carry case.

NOYES Test & Inspection
A Division of AFL Telecommunications

OLS7-FTTH & OLS7-3
Triple Wavelength Laser Sources

The OLS7-FTTH and OLS7-3 from AFL Telecommunications are handheld, rugged laser sources designed for performing insertion loss measurements on single-mode fiber optic links when used with an optical power meter. When paired with an optical fiber identifier, both models may be used for fiber identification. The LASER output is stabilized to ensure accurate test results per current TIA/EIA requirements.

The OLS7-FTTH and OLS7-3 feature a triple wavelength LASER output from a single port and are easy to operate. Each wavelength may be transmitted individually at CW or with user selectable modulated Tone. Also, each wavelength may be transmitted with Wave ID. When transmitting with Wave ID, the OLS7 will also support transmitting pairs of wavelengths in an alternating pattern and triple wavelengths in a sequential pattern. Associated with each operating condition, the designated LED indicator will illuminate to identify the currently enabled operating mode and emitted wavelength wavelength(s) along with battery charge status and external power presence.

The OLS7-FTTH model is designed specifically for today's FTTH network architectures featuring a triple wavelength LASER output from a single port: 1310nm output for testing in the upstream direction and 1490 or 1550nm, for testing in the downstream direction. The OLS7-3 model features 1310/1550/1625 nm triple wavelength LASER output that is used for single-mode applications, such as Telecom or CATV.

The OLS7-FTTH & OLS7-3 output ports are equipped with UCI based removable adapters to allow the output connectors to be inspected and cleaned. Both models offer long battery life from common AA alkaline batteries with external AC adapter available as an option. The OLS7 is fully N.I.S.T. traceable.

Features

- Handheld, rugged, lightweight
- Triple wavelengths from a single port
- Triple, dual, or single Wave ID, CW, Tone
- 270 Hz, 330 Hz, 1 kHz, 2 kHz Tone
- Low battery LED indicator
- Long battery life with 2 x AA alkaline, optional AC adapter
- Cost-effective, easy to use
- N.I.S.T. Traceable

Applications

- Passive Optical Networks (PON) testing
- Certify SM links per TIA/EIA standards
- Fiber identification prior to splicing

Ordering Information

MODEL	INCLUDES
OLS7-FTTH	OLS7-FTTH optical light source, protective rubber boot, 2 x AA batteries, user's guide, and carry case.
OLS7-3	OLS7-3 optical light source, protective rubber boot, 2 x AA batteries, user's guide, and carry case.

NOYES Test & Inspection
A Division of **AFL Telecommunications**

Specifications

OPTICAL	MODEL OLS7-FTTH			MODEL OLS7-3		
Wavelength (±20 nm)	1310 nm	1490 nm	1550 nm	1310 nm	1550 nm	1625 nm
Emitter type	Laser, Class I FDA 21 CFR 1040.10 and 1040.11, IEC 60825-1: 2007-03					
Spectral width	5 nm	3 nm	5 nm	5 nm	5 nm	2 nm
Output power	-5 dBm (typical) into 9/125 fiber					
Output stability	± 0.05 dB over 1 hour (after 15 min warm-up, after 30 sec typical) ± 0.1 dB over 8 hours (after 15 min warm-up, after 30 sec typical)					
Tone output	270 Hz, 330 Hz, 1 kHz, 2 kHz					
GENERAL	**MODELS OLS7-FTTH & OLS7-3**					
Available adapters	SC FC, ST, LC					
Power	2 x AA batteries, optional AC adapter					
Battery life	Typical 72 hours (with one laser active), minimum 40 hours					
Operating temperature	-10° to 50°C, 90% RH (non-condensing)					
Storage temperature	-30° to 60°C, 90% RH (non-condensing)					
Size (H x W x D)	14.0 x 8.1 x 3.8 cm (5.5 x 3.2 x 1.5 in)					
Weight	0.3 kg (0.66 lb)					

All specifications at 25°C.

OLS4 Integrated Laser and LED Source

The OLS4 from AFL Telecommunication is a handheld, rugged, integrated two-port LED and LASER light source designed for performing insertion loss measurements on multimode or single-mode fiber optic links when used with an optical power meter. When paired with an optical fiber identifier, the OLS4 may be used for fiber identification. The LED and LASER outputs are stabilized to ensure accurate test results per current TIA/EIA requirements.

The OLS4 features 850/1300 nm LED output from a multimode output port and 1310/1550 nm LASER output from a single-mode output port. Each wavelength may be transmitted individually at CW or with user selectable modulated Tone (SM output). Also, each wavelength may be transmitted with Wave ID. When transmitting with Wave ID, the OLS4 supports transmitting pairs of wavelengths in an alternating pattern. Associated with each operating condition, the designated LED indicator will illuminate to identify the currently enabled operating mode and emitted wavelength(s) along with battery charge status and external power presence.

Both output ports are equipped with UCI based removable adapters to allow the output connectors to be inspected and cleaned. The OLS4 coffers long battery life from common AA alkaline batteries with external AC adapter available as an option.

The OLS4 is fully N.I.S.T. traceable.

Features

- Handheld, rugged, lightweight
- Integrated LED and Laser light source
- Dual wavelengths from a single port
- Dual or single Wave ID, CW, Tone (SM output)
- 270 Hz, 330 Hz, 1 kHz, 2 kHz Tone
- Low battery LED indicator
- Long battery life with 2 x AA alkaline, optional AC adapter
- Free 50 µm and 62.5 µm mandrels
- Cost-effective, easy to use
- N.I.S.T. Traceable

Applications

- Certify multimode and single-mode links per TIA/EIA standards
- Fiber identification prior to splicing

Specifications

OPTICAL	MM OPTICAL PORT		SM OPTICAL PORT	
Wavelength	850 ± 30 nm	1300 -10/+50 nm	1310 ± 20 nm	1550 ± 20 nm
Emitter type	LED		Laser	
	Class I FDA 21 CFR 1040.10 and 1040.11, IEC 60825-1: 2007-03			
Spectral width	40 nm (typ)	120 nm (typ)	5 nm (max)	5 nm (max)
Output power	> - 20 dBm, 62.5 µm multimode*		0 dBm, 9 µm single-mode	
Output Stability	± 0.1 dB over 8 hours (after 5 min. warm-up)		± 0.05 dB over 1 hour (after 15 min. warm-up) ± 0.1 dB over 8 hours (after 15 min. warm-up)	
GENERAL				
Power	2 x AA batteries, optional AC adapter			
Battery life	Typical 30 hours, minimum 20 hours		Typical 72 hours, minimum 40 hours	
Available adapters	SC FC, ST, LC			
Operating temperature	-10 to 50°C, 90% RH (non-condensing)			
Storage temperature	-30 to 60°C, 90% RH (non-condensing)			
Size (H x W x D)	14.0 x 8.1 x 3.8 cm (5.5 x 3.2 x 1.5 in)			
Weight	0.29 kg (0.65 lb)			

* *Output power will be approximately 3 dB less if a 50µm mandrel-wrapped jumper is used instead of a 62.5µm mandrel-wrapped jumper.*
All specifications at 25°C.

Ordering Information

MODEL	INCLUDES
OLS4	OLS4 optical light source, protective rubber boot, 2 x AA batteries, mandrels, user's guide, and carry case.

NOYES Test & Inspection
A Division of AFL Telecommunications

OLS2-Dual Laser Light Source

The OLS2-Dual from AFL Telecommunications is a handheld, rugged laser source designed for performing insertion loss measurements on single-mode fiber optic links when used with an optical power meter. When paired with an optical fiber identifier, the OLS2-Dual may be used for fiber identification. The LASER output is stabilized to ensure accurate test results per current TIA/EIA requirements.

The OLS2-Dual features 1310 nm and 1550 nm LASER output from a single output port and offers several modes of operation. Each wavelength may be transmitted individually at CW or with user selectable modulated Tone. Also, each wavelength may be transmitted with Wave ID. When transmitting with Wave ID, the OLS2-Dual supports transmitting pairs of wavelengths in an alternating pattern. Associated with each operating condition, the designated LED indicator will illuminate to identify the currently enabled operating mode and emitted wavelength(s) along with battery charge status and external power presence.

The OLS2-Dual output port is equipped with a UCI based removable adapter to allow the output connector to be inspected and cleaned. The OLS2-Dual offers long battery life from common AA alkaline batteries with external AC adapter available as an option.

The OLS2-Dual is fully N.I.S.T. traceable.

Features

- Handheld, rugged, lightweight
- Dual wavelengths from a single port
- Dual or single Wave ID, CW, Tone
- 270 Hz, 330 Hz, 1 kHz, 2 kHz Tone
- Adjustable output
- Low battery LED indicator
- Long battery life with 2 x AA alkaline, optional AC adapter
- Cost-effective, easy to use
- N.I.S.T. Traceable

Applications

- Certify SM links per TIA/EIA standards
- Fiber identification prior to splicing

Specifications

OPTICAL	OLS2-DUAL (SINGLE PORT)	
Wavelength	1310 ±20 nm	1550 ±20 nm
Emitter type	Laser, Class I FDA 21 CFR 1040.10 and 1040.11, IEC 60825-1: 2007-03	
Spectral width (FWHM)	5 nm (max)	
Output power	0 dBm*	
Output stability	± 0.05 dB over 1 hour (after 15 min. warm-up) ± 0.1 dB over 8 hours (after 15 min. warm-up)	
Tone output	270 Hz, 330 Hz, 1 kHz, 2 kHz	
GENERAL		
Power	2 x AA batteries, optional AC adapter	
Battery life	Typical 120 hours, minimum 75 hours	
Available adapters	SC FC, ST, LC	
Operating temperature	-10 to 50°C, 90% RH (non-condensing)	
Storage temperature	-30 to 60°C, 90% RH (non-condensing)	
Size (H x W x D)	14.0 x 8.1 x 3.8 cm (5.5 x 3.2 x 1.5 in)	
Weight	0.29 kg (0.65 lb)	

* *Adjustable 2 dB.*
All specifications at 25°C.

Ordering Information

MODEL	INCLUDES
OLS2-Dual	OLS2-Dual optical light source, protective rubber boot, 2 x AA batteries, user's guide, and carry case.

NOYES Test & Inspection
A Division of AFL Telecommunications

OLS1-Dual LED Light Source

The OLS1-Dual from AFL Telecommunication is a handheld, rugged LED light source designed for performing insertion loss measurements on multimode fiber optic links when used with an optical power meter. The LED output is stabilized to ensure accurate test results per current TIA/EIA requirements.

The OLS1-Dual features 850 nm and 1300 nm LED output from a single output port and is easy to operate with only a power button and a wavelength select button. Each wavelength may be transmitted individually at CW or with Wave ID. When transmitting with Wave ID, the OLS1-Dual supports transmitting pairs of wavelengths in an alternating pattern. Associated with each operating condition, the designated LED indicator will illuminate to identify the currently enabled operating mode and emitted wavelength(s) along with battery charge status and external power presence.

The output port is equipped with UCI based removable adapters to allow the output connectors to be inspected and cleaned. The OLS1-Dual offers long battery life from common AA alkaline batteries with external AC adapter available as an option.
The OLS1-Dual is fully N.I.S.T. traceable.

Features

- Handheld, rugged, lightweight
- Dual wavelengths from a single port
- Dual or single Wave ID, CW
- Low battery LED indicator
- Long battery life with 2 x AA alkaline, optional AC adapter
- Free 50 µm and 62.5 µm mandrels
- Cost-effective, easy to use
- N.I.S.T. Traceable

Applications

- Certify 50 or 62.5 µm multimode fiber links for any 850 or 1300 nm application, including Gigabit Ethernet (GBE) per TIA/EIA standards
- The 1300 nm output can also be used to test short distance (up to 10 km) single-mode fiber links

Specifications

OPTICAL	OLS1-DUAL (SINGLE PORT)	
Wavelength	850 ±30 nm	1300 +50/-10 nm
Emitter type	LED, Class I FDA 21 CFR 1040.10 and 1040.11, IEC 60825-1: 2007-03	
Spectral width	40 nm (typ)	120 nm (typ)
Output power	>-20 dBm*	
Output stability	± 0.1 dB over 8 hours (after 5 min. warm-up)	
Fiber size	62.5 µm**	
GENERAL		
Power	2 x AA batteries, optional AC adapter	
Battery life	Typical 30 hours, minimum 20 hours	
Available adapters	SC, FC, ST	
Operating temperature	-10 to 50°C, 90% RH (non-condensing)	
Storage temperature	-30 to 60°C, 90% RH (non-condensing)	
Size (H x W x D)	14.0 x 8.1 x 3.8 cm (5.5 x 3.2 x 1.5 in)	
Weight	0.29 kg (0.65 lb)	

* *Output power will be approximately 3 dB less if a 50µm mandrel-wrapped jumper is used instead of a 62.5µm mandrel-wrapped jumper.*
** *May be used to test 50 or 62.5µm fiber with supplied mandrels.*
All specifications at 25°C.

Ordering Information

MODEL	INCLUDES
OLS1-Dual	OLS1-Dual optical light source, protective rubber boot, 2 x AA batteries, mandrels, user's guide, and carry case.

NOYES Test & Inspection
A Division of **AFL Telecommunications**

OLS1 LED Light Source

The OLS1 LED light source is a cost-effective, rugged, handheld instrument designed for performing insertion loss measurements on fiber optic links when used with an optical power meter. The LED output is stabilized to ensure accurate test results per current TIA/EIA requirements.

The OLS1 is easy to operate with only a [Wavelength/ Power] switch, which selects optical wavelengths or disables unit (⏻ position). [Active Output], [Battery], and [External Power] indicators identify the currently enabled output port, battery charge status, and external power presence. Weighing only 0.65 lb, the OLS1 is compact and convenient for field use. The OLS1 operates over 60 hours from a typical 9V alkaline battery. An AC adapter is optional for extended use.

The OLS1 light source is fully N.I.S.T. traceable.

Features

- Rugged, handheld, lightweight
- 850 and 1300 nm LED (multimode) light sources (660 nm available)
- Certify 50 or 62.5µm multimode fiber links for any 850 or 1300 nm application, including Gigabit Ethernet (GBE) per TIA/EIA standards
- Free 50µm and 62.5µm mandrels
- Long battery life
- Cost-effective, easy to use
- N.I.S.T. Traceable

Ordering Information

Model	Includes
All OLS1 models	Protective rubber boot, 9V battery, 50 and 62.5µm mandrels, manual, and carrying case.

Optical light sources and optical power meters can be packaged together as a kit.

Applications

- Operating at 850 nm, the OLS1-1C can be used for testing Ethernet, Gigabit Ethernet, Token Ring, and other multimode LAN systems.
- Operating at 660 nm, the OLS1-1C can test 1000µ fiber and trace fibers with the visible 660 nm output.
- The OLS1-2C operates at 850 and 1300 nm for use on Ethernet, Token Ring, and FDDI. The 1300 nm output can also be used to test short distance (up to 10 km) single-mode fiber links.

Specifications

Optical Specifications	**OLS1-1C**		**OLS1-2C**	
Output ports	2		2	
Output wavelength	660 nm- red	850 + 35/-40 nm	850 + 35/-40 nm	1300 +50/-10 nm
Spectral width (typ) (FWHM)	30 nm	40 nm	40 nm	120 nm
Output power	-10 dBm*	>-20 dBm	>-20 dBm	>-20 dBm
Fiber size	1000 µm, 62.5 µm**		62.5 µm**	
Output connector	ST		ST	
Emitter type	LED, Class I FDA 21 CFR 1040.10 and 1040.11, IEC 60825-1: 2007-03			
Stability	± 0.1 dB over 8 hours (after 5 min. warm-up)			
General Specifications				
Power	Typical 60 hours with 9V battery, optional AC adapter			
Operating temperature	-10 to 50°C			
Storage temperature	-30 to 60°C			
Size (H x W x D)	14.0 x 8.1 x 3.8 cm (5.5 x 3.2 x 1.5 in)			
Weight	0.29 kg (0.65 lb)			

* -10 dBm output is into 1000 micron fiber.
** May be used to test 50 or 62.5µm fiber with supplied mandrels.
All specifications at 25°C

NOYES Test & Inspection
A Division of **AFL Telecommunications**

CSS1-SM Contractor Series Dual Laser Light Source

The Noyes CSS1-SM from AFL Telecommunications is a palm-sized, cost-effective dual LASER source designed for performing insertion loss measurements on single-mode fiber optic links when used with an optical power meter. When paired with an optical fiber identifier, the CSS1-SM may be used for fiber identification. The LASER output is stabilized to ensure accurate test results per current TIA/EIA requirements. Weighing only 0.4 lb, this light source is ideal for field use.

The CSS1-SM features 1310 nm and 1550 nm LASER output from a single output port and is easy to operate. Each wavelength may be transmitted individually at CW or with user selectable modulated Tone. The output port is equipped with UCI based removable adapters to allow the output connectors to be inspected and cleaned. A large LCD display with backlight shows emitted wavelengths [nm], tone frequency [Hz], and indicates a low battery condition. The CSS1-SM offers long battery life from common AA alkaline batteries.

The CSS1-SM is fully N.I.S.T. traceable.

Features

- Palm-sized, rugged, lightweight
- Dual wavelengths from a single port
- CW and modulated Tone
- 270, 330, 1000, 2000 Hz Tone
- Large LCD with backlight
- Automatic power-off function
- Battery gauge
- Long battery life with AA alkaline
- Cost-effective, easy to use
- N.I.S.T traceable

Applications

- Certify SM links per TIA/EIA standards
- Fiber identification prior to splicing

Specifications

OPTICAL	CSS1-SM (SINGLE PORT)
Output wavelength	1310 nm ±20 nm, 1550 nm ±20 nm
Spectral width (max)	5 nm
Output power	⩾ 0.0 dBm into 9/125 fiber
Emitter type	Laser, Class I FDA 21 CFR 1040.10 and 1040.11, IEC 60825-1: 2007-03
Output stability	± 0.05 dB typical over 1 hour (after 30 sec.) ± 0.15 dB over 8 hours (after 30 sec. typically)
Tone output	270, 330, 1000, 2000 Hz
GENERAL	
Output connector	SC, FC, ST, LC
Power	2 x AA batteries
Battery life	75 hours typical
Operating temperature	-10 to 50°C, 90% RH (non-condensing)
Storage temperature	-30 to 60°C, 90% RH (non-condensing)
Size (H x W x D)	11.4 x 6.4 x 3.2 cm (4.5 x 2.5 x 1.3 in)
Weight	0.18 kg (0.4 lb)

All specifications at 25°C.

Ordering Information

MODEL	INCLUDES
CSS1-SM	2 x AA batteries, user's guide, and carry case.

NOYES Test & Inspection
A Division of AFL Telecommunications

CSS1-MM
Contractor Series Dual LED Light Source

The Noyes CSS1-MM from AFL Telecommunications is a palm-sized, cost-effective dual LED light source designed for performing insertion loss measurements on multimode fiber optic links when used with an optical power meter. When paired with an optical fiber identifier, the CSS1-MM may be used for fiber identification. The LED output is stabilized to ensure accurate test results per current TIA/EIA requirements. Weighing only 0.4 lb, this light source is ideal for field use.

The CSS1-MM features 850 nm and 1300 nm LED output from a single output port and is easy to operate. Each wavelength may be transmitted individually at CW or with user selectable modulated Tone. The optical output port is equipped with a fixed SC connector. A large LCD display with backlight shows emitted wavelengths [nm], tone frequency [Hz], and indicates a low battery condition. The CSS1-MM offers a five-minute auto-off feature and long battery life from common AA alkaline batteries.

The CSS1-MM is fully N.I.S.T. traceable.

Features

- Palm-sized, rugged, lightweight
- Dual wavelengths from a single port
- CW and modulated Tone
- 270, 330, 1000, 2000 Hz Tone
- Large LCD with backlight
- Automatic power-off function
- Battery gauge
- Long battery life with AA alkaline
- Free 50 µm and 62.5 µm mandrels
- Cost-effective, easy to use
- N.I.S.T traceable

Applications

- Certify 50 or 62.5 µm multimode fiber links for any 850 or 1300 nm application, including Gigabit Ethernet (GBE), per TIA/EIA standards
- Fiber identification prior to splicing

Specifications

OPTICAL	**CSS1-MM (SINGLE PORT)**	
Output wavelength	850 nm ±20 nm	1300 nm +40/-60 nm
Spectral width (max)	35 nm	170 nm
Output power	⩾ -20.0 dBm into 62.5/125 fiber	
Emitter type	LED, Class I FDA 21 CFR 1040.10 and 1040.11, IEC 60825-1: 2007-03	
Output stability	± 0.1 dB over 1 hour (after 30 sec typically) ± 0.15 dB over 8 hours (after 30 sec typically)	
Tone output	270, 330, 1000, 2000 Hz	
GENERAL		
Output connector	SC	
Power	2 x AA batteries	
Battery life	30 hours typical	
Operating temperature	-10 to 50°C, 90% RH (non-condensing)	
Storage temperature	-30 to 60°C, 90% RH (non-condensing)	
Size (H x W x D)	11.4 x 6.4 x 3.2 cm (4.5 x 2.5 x 1.3 in)	
Weight	0.18 kg (0.4 lb)	

All specifications at 25°C

Ordering Information

MODEL	**INCLUDES**
CSS1-MM	2 x AA batteries, user's guide, and carry case.

NOYES Test & Inspection
A Division of **AFL Telecommunications**

SMLP5-5 Single-mode/Multimode Test Kit with Wave ID, Set Reference, and Data Storage

The SMLP5-5 test kit combines the OPM5-2D optical power meter and OLS4 integrated LED and LASER light source and is ideally suited for testing fiber optic networks with hybrid (single-mode and multimode) cables.

The OLS4 features 850/1300 nm LED output from a multimode output port and 1310/1550 nm LASER output from a single-mode output port. Each wavelength may be transmitted individually at CW or with user selectable modulated Tone (SM output). Also, each wavelength may be transmitted with Wave ID. When transmitting with Wave ID, the OLS4 supports transmitting pairs of wavelengths in an alternating pattern. Associated with each operating condition, the designated LED indicator will illuminate to identify the currently enabled operating mode and emitted wavelength(s) along with battery charge status and external power presence. Both output ports are equipped with UCI based removable adapters to allow the output connectors to be inspected and cleaned.

The OPM5-2D features automatic wavelength identification and switching (Wave ID) when used with the OLS4, multiple test Tone detection for fiber identification, and stores optical references for each calibrated wavelength and up to 500 records per wavelength of power or insertion loss measurements. Using the supplied Windows® compatible software and USB connection, test records are transferred to a PC for analysis, printing, and storage. A large dual-wavelength LCD display with backlight shows measured power [dBm or µW] or insertion loss [dB], calibrated wavelengths [nm], tone signal [Hz], wavelength ID, and estimated remaining battery life. The OPM5-2D optical input port accepts a variety of Noyes thread-on style adapter caps (ordered separately) to meet a wide range of testing requirements.

The OPM5-2D or OLS4 offer long battery life from common AA alkaline batteries with external AC adapter available as an option.
The SMLP5-5 test kit is fully N.I.S.T. traceable.

Features

- Handheld, rugged, lightweight
- Wave ID (auto identification & switching)
- Dual or single Wave ID, CW, Tone
- 270 Hz, 330 Hz, 1 kHz, 2 kHz Tone
- Large LCD with backlight (OPM5-2D)
- Power measurements in dBm or µW; insertion loss in dB
- Reference power level storage
- Up to 500 records per wavelength storage
- USB port for download of stored records
- Windows® compatible software to view, print, and archive stored records
- Low battery indicator
- Long battery life with 2 x AA alkaline, optional AC adapter
- Free 50 µm and 62.5 µm mandrels
- Cost-effective, easy to use
- N.I.S.T traceable

Applications

- Certify multimode and single-mode links per TIA/EIA standards
- Fiber identification prior to splicing

Ordering Information

MODEL	INCLUDES
SMLP5-5	OLS4 optical light source, OPM5-2D optical power meter, AA batteries, protective rubber boots, adapter cap, USB cable, Windows® compatible software and user's guide, 50 and 62.5µm mandrels, SMLP5-5 test kit user's guide, and carry case

Test jumpers and connector adapters are required for operation (purchased separately). Test jumpers with a variety of connector styles and fiber types and adapter caps for most common connectors may be purchased from AFL Telecommunications.

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SMLP5-5 Single-mode/Multimode Test Kit with Wave ID, Set Reference, and Data Storage

OLS4 Light Source specifications

OPTICAL	MM OPTICAL PORT		SM OPTICAL PORT	
Wavelength	850 ± 30 nm	1300 -10/+50 nm	1310 ± 20 nm	1550 ± 20 nm
Emitter type	LED		Laser	
	Class I FDA 21 CFR 1040.10 and 1040.11, IEC 60825-1: 2007-03			
Spectral width	40 nm (typ)	120 nm (typ)	5 nm (max)	5 nm (max)
Output power	> - 20 dBm, 62.5 µm multimode*		0 dBm, 9 µm single-mode	
Output Stability	± 0.1 dB over 8 hours (after 5 min. warm-up)		± 0.05 dB over 1 hour (after 15 min. warm-up) ± 0.1 dB over 8 hours (after 15 min. warm-up)	
GENERAL				
Power	2 x AA batteries, optional AC adapter			
Battery life	Typical 30 hours, minimum 20 hours		Typical 72 hours, minimum 40 hours	
Available adapters	SC FC, ST, LC			
Operating temperature	-10 to 50°C, 90% RH (non-condensing)			
Storage temperature	-30 to 60°C, 90% RH (non-condensing)			
Size (H x W x D)	14.0 x 8.1 x 3.8 cm (5.5 x 3.2 x 1.5 in)			
Weight	0.29 kg (0.65 lb)			

* *Output power will be approximately 3 dB less if a 50µm mandrel-wrapped jumper is used instead of a 62.5µm mandrel-wrapped jumper.*
All specifications at 25°C.

OPM5-2D specifications

OPTICAL	OPM5-2D
Calibrated wavelengths	850, 1300, 1310, 1490, 1550 nm
Detector type	Germanium (Ge)
Measurement range	+6 to -60 dBm
Tone detect range	+6 to -50 dBm +6 to -45 dBm for 850nm
Wavelength ID range	+6 to -50 dBm +6 to -45 dBm for 850nm
Accuracy*	± 0.25 dB
Resolution	0.01 dB
Measurement units	dB, dBm, µW
GENERAL	
Power	2 x AA batteries, optional AC adapter
Battery life	300 hours
Operating temperature	-10 to 50°C, 90% RH (non-condensing)
Storage temperature	-30 to 60°C, 90% RH (non-condensing)
Size (H x W x D)	14.0 x 8.1 x 3.8 cm (5.5 x 3.2 x 1.5 in)
Weight	0.26 kg (0.58 lb)

* *Accuracy measured at 25ºC and -10 dBm per N.I.S.T. standards.*
All specifications at 25°C

NOYES Test & Inspection
A Division of **AFL Telecommunications**

SMLP4-4 Single-mode/Multimode Test Kit with Wave ID and Set Reference

The SMLP4-4 test kit combines the OPM4-2D optical power meter and OLS4 integrated LED and LASER light source and is ideally suited for testing fiber optic networks with hybrid (single-mode and multimode) cables.

The OLS4 features 850/1300 nm LED output from a multimode output port and 1310/1550 nm LASER output from a single-mode output port. Each wavelength may be transmitted individually at CW or with user selectable modulated Tone (SM output). Also, each wavelength may be transmitted with Wave ID. When transmitting with Wave ID, the OLS4 supports transmitting pairs of wavelengths in an alternating pattern. Associated with each operating condition, the designated LED indicator will illuminate to identify the currently enabled operating mode and emitted wavelength(s) along with battery charge status and external power presence. Both output ports are equipped with UCI based removable adapters to allow the output connectors to be inspected and cleaned.

The OPM4-2D features automatic wavelength identification and switching (Wave ID) when used with the OLS4, multiple test Tone detection for fiber identification, and stores optical references for each calibrated wavelength. A large dual-wavelength LCD display with backlight shows measured power [dBm or µW] or insertion loss [dB], calibrated wavelengths [nm], tone signal [Hz], wavelength ID, and estimated remaining battery life. The OPM4-2D optical input port accepts a variety of Noyes thread-on style adapter caps (ordered separately) to meet a wide range of testing requirements.

The OPM4-2D and OLS4 offer long battery life from common AA alkaline batteries. The SMLP4-4 test kit is fully N.I.S.T. traceable.

Features

- Handheld, rugged, lightweight
- Wave ID (auto identification & switching)
- Dual or single Wave ID, CW, Tone
- 270 Hz, 330 Hz, 1 kHz, 2 kHz Tone
- Large LCD with backlight (OPM4-2D)
- Power measurements in dBm or µW; insertion loss in dB
- Reference power level storage
- Low battery indicator
- Long battery life with 2 x AA alkaline
- Free 50 µm and 62.5 µm mandrels
- Cost-effective, easy to use
- N.I.S.T traceable

Applications

- Certify multimode and single-mode links per TIA/EIA standards
- Fiber identification prior to splicing

Ordering Information

MODEL	INCLUDES
SMLP4-4	OLS4 optical light source, OPM4-2D optical power meter, AA batteries, protective rubber boots, adapter cap, 50 and 62.5µm mandrels, SMLP4-4 test kit user's guide, and carry case.

Test jumpers and connector adapters are required for operation (purchased separately). Test jumpers with a variety of connector styles and fiber types and adapter caps for most common connectors may be purchased from AFL Telecommunications.

NOYES Test & Inspection
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SMLP4-4 Single-mode/Multimode Test Kit with Wave ID and Set Reference

OLS4 Light Source specifications

OPTICAL	MM OPTICAL PORT		SM OPTICAL PORT	
Wavelength	850 ± 30 nm	1300 -10/+50 nm	1310 ± 20 nm	1550 ± 20 nm
Emitter type	LED		Laser	
	Class I FDA 21 CFR 1040.10 and 1040.11, IEC 60825-1: 2007-03			
Spectral width	40 nm (typ)	120 nm (typ)	5 nm (max)	5 nm (max)
Output power	> - 20 dBm, 62.5 µm multimode*		0 dBm, 9 µm single-mode	
Output Stability	± 0.1 dB over 8 hours (after 5 min. warm-up)		± 0.05 dB over 1 hour (after 15 min. warm-up) ± 0.1 dB over 8 hours (after 15 min. warm-up)	
GENERAL				
Power	2 x AA batteries, optional AC adapter			
Battery life	Typical 30 hours, minimum 20 hours		Typical 72 hours, minimum 40 hours	
Available adapters	SC FC, ST, LC			
Operating temperature	-10 to 50°C, 90% RH (non-condensing)			
Storage temperature	-30 to 60°C, 90% RH (non-condensing)			
Size (H x W x D)	14.0 x 8.1 x 3.8 cm (5.5 x 3.2 x 1.5 in)			
Weight	0.29 kg (0.65 lb)			

* *Output power will be approximately 3 dB less if a 50µm mandrel-wrapped jumper is used instead of a 62.5µm mandrel-wrapped jumper.*
All specifications at 25°C.

OPM4-2D specifications

OPTICAL	OPM4-2D
Calibrated wavelengths	850, 1300,1310, 1490, 1550 nm
Detector type	Germanium (Ge)
Measurement range	+6 to -60 dBm
Tone detect range	+6 to -50 dBm +6 to -45 for 850 nm
Wavelength ID range	+6 to -50 dBm +6 to -45 dBm for 850 nm
Accuracy*	± 0.25 dB
Resolution	0.01 dB
Measurement units	dB, dBm, µW
GENERAL	
Power	2 x AA batteries
Battery life	300 hours
Operating temperature	-10 to 50°C, 90% RH (non-condensing)
Storage temperature	-30 to 60°C, 90% RH (non-condensing)
Size (H x W x D)	14.0 x 8.1 x 3.8 cm (5.5 x 3.2 x 1.5 in)
Weight	0.26 kg (0.58 lb)

* *Accuracy measured at 25ºC and -10 dBm per N.I.S.T. standards.*
All specifications at 25°C

NOYES Test & Inspection
A Division of **AFL Telecommunications**

SLP5 Triple Wave Test Kits with Wave ID, Set Reference, and Data Storage

The SLP5 triple wavelength single-mode test kits are available in two models, SLP5-FTTH and SLP5-7. The SLP5-FTTH and SLP5-7 model combine the OPM5-4D optical power meter and either OLS7-FTTH (1310/1490/1550 nm) or OLS7-3 (1310/1550/1625 nm) LASER source respectively.

The OLS7-FTTH and OLS7-3 feature a triple wavelength LASER output from a single port and are easy to operate. Each wavelength may be transmitted individually at CW or with user selectable modulated Tone. Also, each wavelength may be transmitted with Wave ID. When transmitting with Wave ID, the OLS7 will also support transmitting pairs of wavelengths in an alternating pattern and triple wavelengths in a sequential pattern. Associated with each operating condition, the designated LED indicator will illuminate to identify the currently enabled operating mode and emitted wavelength wavelength(s) along with battery charge status and external power presence. The OLS7-FTTH & OLS7-3 output ports are equipped with UCI based removable adapters to allow the output connectors to be inspected and cleaned.

The OPM5-4D features automatic wavelength identification and switching (Wave ID) when used with the OLS7, multiple test Tone detection for fiber identification, and stores optical references for each calibrated wavelength. A large dual-wavelength LCD display with backlight shows measured power [dBm or µW] or insertion loss [dB], calibrated wavelengths [nm], tone signal [Hz], wavelength ID, and estimated remaining battery life. The OPM5-4D optical input port accepts a variety of Noyes thread-on style adapter caps (ordered separately) to meet a wide range of testing requirements.

The OPM5-4D and OLS7 offer long battery life from common AA alkaline batteries with external AC adapter available as an option.
The SLP5-FTTH and SLP5-7 test kits are fully N.I.S.T. traceable.

Features

- Handheld, rugged, lightweight
- Wave ID (auto identification & switching)
- Triple, dual, or single Wave ID, CW, Tone
- 270 Hz, 330 Hz, 1 kHz, 2 kHz Tone
- Large LCD with backlight (OPM5-4D)
- Power measurements in dBm or µW; insertion loss in dB
- Reference power level storage
- Up to 500 records per wavelength storage
- USB port for download of stored records
- Windows® compatible software to view, print, and archive stored records
- Low battery indicator
- Long battery life with 2 x AA alkaline, optional AC adapter
- Cost-effective, easy to use
- N.I.S.T traceable

Applications

- Passive Optical Networks (PON) testing
- Certify SM links per TIA/EIA standards
- Fiber identification prior to splicing

Ordering Information

MODEL	INCLUDES
SLP5 -7	OLS7-3 optical light source, OPM5-4D optical power meter, AA batteries, protective rubber boots, adapter cap, USB cable, Windows® compatible software and user's guide, SLP5-7 test kit user's guide, and carry case.
SLP5-FTTH	OLS7-FTTH optical light source, OPM5-4D optical power meter, AA batteries, protective rubber boots, adapter cap, USB cable, Windows® compatible software and user's guide, SLP5-FTTH test kit user's guide, and carry case.

Test jumpers and connector adapters are required for operation (purchased separately). Test jumpers with a variety of connector styles and fiber types and adapter caps for most common connectors may be purchased from AFL Telecommunications.

NOYES Test & Inspection
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SLP5 Triple Wave Test Kits with Wave ID, Set Reference, and Data Storage

OLS7 Specifications

OPTICAL	MODEL OLS7-FTTH			MODEL OLS7-3		
Wavelength (±20 nm)	1310 nm	1490 nm	1550 nm	1310 nm	1550 nm	1625 nm
Emitter type	Laser, Class I FDA 21 CFR 1040.10 and 1040.11, IEC 60825-1: 2007-03					
Spectral width	5 nm	3 nm	5 nm	5 nm	5 nm	2 nm
Output power	-5 dBm (typical) into 9/125 fiber					
Output stability	± 0.05 dB over 1 hour (after 15 min warm-up, after 30 sec typical) ± 0.1 dB over 8 hours (after 15 min warm-up, after 30 sec typical)					
Tone output	270 Hz, 330 Hz, 1 kHz, 2 kHz					
GENERAL	**MODELS OLS7-FTTH & OLS7-3**					
Available adapters	SC, FC, ST, LC					
Power	2 x AA batteries, optional AC adapter					
Battery life	Typical 72 hours (with one laser active), minimum 40 hours					
Operating temperature	-10° to 50°C, 90% RH (non-condensing)					
Storage temperature	-30° to 60°C, 90% RH (non-condensing)					
Size (H x W x D)	14.0 x 8.1 x 3.8 cm (5.5 x 3.2 x 1.5 in)					
Weight	0.3 kg (0.66 lb)					

All specifications at 25°C.

OPM5-4D specifications

OPTICAL	OPM5-4D
Calibrated wavelengths	850, 980, 1310, 1490, 1550, 1625 nm
Detector type	Filtered InGaAs
Measurement range	+26 to -50 dBm
Tone detect range	+6 to -30 dBm +6 to -25 dBm for 850nm
Wavelength ID range	+6 to -30 dBm +6 to -25 dBm for 850nm
Accuracy*	± 0.25 dB
Resolution	0.01 dB
Measurement units	dB, dBm, µW
GENERAL	
Power	2 x AA batteries, optional AC adapter
Battery life	300 hours
Operating temperature	-10 to 50°C, 90% RH (non-condensing)
Storage temperature	-30 to 60°C, 90% RH (non-condensing)
Size (H x W x D)	14.0 x 8.1 x 3.8 cm (5.5 x 3.2 x 1.5 in)
Weight	0.26 kg (0.58 lb)

* *Accuracy measured at 25ºC and -10 dBm per N.I.S.T. standards.*
All specifications at 25°C

NOYES Test & Inspection
A Division of **AFL Telecommunications**

SLP5-6D Single-mode Test Kit with Wave ID, Set Reference, and Data Storage

The SLP5-6D test kit combines the OPM5-4D optical power meter and OLS2-Dual LASER light source and is ideally suited for testing single-mode fiber optic networks.

The OLS2-Dual features 1310 nm and 1550 nm LASER output from a single output port and offers several modes of operation. Each wavelength may be transmitted individually at CW or with user selectable modulated Tone. Also, each wavelength may be transmitted with Wave ID. When transmitting with Wave ID, the OLS2-Dual supports transmitting pairs of wavelengths in an alternating pattern. Associated with each operating condition, the designated LED indicator will illuminate to identify the currently enabled operating mode and emitted wavelength(s) along with battery charge status and external power presence. The OLS2-Dual output port is equipped with a UCI based removable adapter to allow the output connector to be inspected and cleaned.

The OPM5-4D features automatic wavelength identification and switching (Wave ID) when used with the OLS2-Dual, multiple test Tone detection for fiber identification, and stores optical references for each calibrated wavelength and up to 500 records per wavelength of power or insertion loss measurements. Using the supplied Windows® compatible software and USB connection, test records are transferred to a PC for analysis, printing, and storage. A large dual-wavelength LCD display with backlight shows measured power [dBm or µW] or insertion loss [dB], calibrated wavelengths [nm], tone signal [Hz], wavelength ID, and estimated remaining battery life. The OPM5-4D optical input port accepts a variety of Noyes thread-on style adapter caps (ordered separately) to meet a wide range of testing requirements.

The OPM5-4D and OLS2-Dual offer long battery life from common AA alkaline batteries with external AC adapter available as an option.
The SLP5-6D test kit is fully N.I.S.T. traceable.

Features

- Handheld, rugged, lightweight
- Wave ID (auto identification & switching)
- Dual or single Wave ID, CW, Tone
- 270 Hz, 330 Hz, 1 kHz, 2 kHz Tone
- Adjustable output
- Large LCD with backlight (OPM5-4D)
- Power measurements in dBm or µW; insertion loss in dB
- Reference power level storage
- Up to 500 records per wavelength storage
- USB port for download of stored records
- Windows® compatible software to view, print, and archive stored records
- Low battery indicator
- Long battery life with 2 x AA alkaline, optional AC adapter
- Cost-effective, easy to use
- N.I.S.T traceable

Applications

- Certify single-mode links per TIA/EIA standards
- Fiber identification prior to splicing

Ordering Information

MODEL	INCLUDES
SLP5 -6D	OLS2-Dual optical light source, OPM5-4D optical power meter, AA batteries, protective rubber boots, adapter cap, USB cable, Windows® compatible software and user's guide, SLP5-6D test kit user's guide, and carry case.

Test jumpers and connector adapters are required for operation (purchased separately). Test jumpers with a variety of connector styles and fiber types and adapter caps for most common connectors may be purchased from AFL Telecommunications.

NOYES Test & Inspection
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SLP5-6D Single-mode Test Kit with Wave ID, Set Reference, and Data Storage

OLS2-Dual specifications

OPTICAL	OLS2-DUAL (SINGLE PORT)	
Wavelength	1310 ±20 nm	1550 ±20 nm
Emitter type	Laser, Class I FDA 21 CFR 1040.10 and 1040.11, IEC 60825-1: 2007-03	
Spectral width (FWHM)	5 nm (max)	
Output power	0 dBm*	
Output stability	± 0.05 dB over 1 hour (after 15 min. warm-up) ± 0.1 dB over 8 hours (after 15 min. warm-up)	
Tone output	270 Hz, 330 Hz, 1 kHz, 2 kHz	
GENERAL		
Power	2 x AA batteries, optional AC adapter	
Battery life	Typical 120 hours, minimum 75 hours	
Available adapters	SC FC, ST, LC	
Operating temperature	-10 to 50°C, 90% RH (non-condensing)	
Storage temperature	-30 to 60°C, 90% RH (non-condensing)	
Size (H x W x D)	14.0 x 8.1 x 3.8 cm (5.5 x 3.2 x 1.5 in)	
Weight	0.29 kg (0.65 lb)	

* *Adjustable 2 dB.*
All specifications at 25°C.

OPM5-4D specifications

OPTICAL	OPM5-4D
Calibrated wavelengths	850, 980, 1310, 1490, 1550, 1625 nm
Detector type	Filtered InGaAs
Measurement range	+26 to -50 dBm
Tone detect range	+6 to -30 dBm +6 to -25 dBm for 850nm
Wavelength ID range	+6 to -30 dBm +6 to -25 dBm for 850nm
Accuracy*	± 0.25 dB
Resolution	0.01 dB
Measurement units	dB, dBm, µW
GENERAL	
Power	2 x AA batteries, optional AC adapter
Battery life	300 hours
Operating temperature	-10 to 50°C, 90% RH (non-condensing)
Storage temperature	-30 to 60°C, 90% RH (non-condensing)
Size (H x W x D)	14.0 x 8.1 x 3.8 cm (5.5 x 3.2 x 1.5 in)
Weight	0.26 kg (0.58 lb)

* *Accuracy measured at 25ºC and -10 dBm per N.I.S.T. standards.*
All specifications at 25°C

NOYES Test & Inspection

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SLP4 Triple Wave Test Kits with Wave ID and Set Reference

The SLP4 triple wavelength single-mode test kits are available in two models, SLP4-FTTH and SLP4-7. The SLP4-FTTH and SLP4-7 model combine the OPM4-4D optical power meter and either OLS7-FTTH (1310/1490/1550 nm) or OLS7-3 (1310/1550/1625 nm) LASER source respectively.

The OLS7-FTTH and OLS7-3 feature a triple wavelength LASER output from a single port and are easy to operate. Each wavelength may be transmitted individually at CW or with user selectable modulated Tone. Also, each wavelength may be transmitted with Wave ID. When transmitting with Wave ID, the OLS7 will also support transmitting pairs of wavelengths in an alternating pattern and triple wavelengths in a sequential pattern. Associated with each operating condition, the designated LED indicator will illuminate to identify the currently enabled operating mode and emitted wavelength wavelength(s) along with battery charge status and external power presence. The OLS7-FTTH & OLS7-3 output ports are equipped with UCI based removable adapters to allow the output connectors to be inspected and cleaned.

The OPM4-4D features automatic wavelength identification and switching (Wave ID) when used with the OLS7, multiple test Tone detection for fiber identification, and stores optical references for each calibrated wavelength. A large dual-wavelength LCD display with backlight shows measured power [dBm or µW] or insertion loss [dB], calibrated wavelengths [nm], tone signal [Hz], wavelength ID, and estimated remaining battery life. The OPM4-4D optical input port accepts a variety of Noyes thread-on style adapter caps (ordered separately) to meet a wide range of testing requirements.

The OPM4-4D and OLS7 offer long battery life from common AA alkaline batteries. The SLP4-7 and SLP4-FTTH kits are fully N.I.S.T. traceable.

Features

- Handheld, rugged, lightweight
- Wave ID (auto identification & switching)
- Triple, dual, or single Wave ID, CW, Tone
- 270 Hz, 330 Hz, 1 kHz, 2 kHz Tone
- Large LCD with backlight (OPM4-4D)
- Power measurements in dBm or µW; insertion loss in dB
- Reference power level storage
- Low battery indicator
- Long battery life with 2 x AA alkaline
- Cost-effective, easy to use
- N.I.S.T traceable

Applications

- Passive Optical Networks (PON) testing
- Certify single-mode links per TIA/EIA standards
- Fiber identification prior to splicing

Ordering Information

MODEL	INCLUDES
SLP4-7	OLS7-3 optical light source, OPM4-4D optical power meter, AA batteries, protective rubber boots, adapter cap, SLP4-7 test kit user's guide, and carry case.
SLP4-FTTH	OLS7-FTTH optical light source, OPM4-4D optical power meter, AA batteries, protective rubber boots, adapter cap, SLP4-FTTH test kit user's guide, and carry case.

Test jumpers and connector adapters are required for operation (purchased separately). Test jumpers with a variety of connector styles and fiber types and adapter caps for most common connectors may be purchased from AFL Telecommunications.

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SLP4 Triple Wave Test Kits with Wave ID and Set Reference

OLS7 Specifications

OPTICAL	MODEL OLS7-FTTH			MODEL OLS7-3		
Wavelength (±20 nm)	1310 nm	1490 nm	1550 nm	1310 nm	1550 nm	1625 nm
Emitter type	Laser, Class I FDA 21 CFR 1040.10 and 1040.11, IEC 60825-1: 2007-03					
Spectral width	5 nm	3 nm	5 nm	5 nm	5 nm	2 nm
Output power	-5 dBm (typical) into 9/125 fiber					
Output stability	± 0.05 dB over 1 hour (after 15 min warm-up, after 30 sec typical) ± 0.1 dB over 8 hours (after 15 min warm-up, after 30 sec typical)					
Tone output	270 Hz, 330 Hz, 1 kHz, 2 kHz					
GENERAL	**MODELS OLS7-FTTH & OLS7-3**					
Available adapters	SC FC, ST, LC					
Power	2 x AA batteries, optional AC adapter					
Battery life	Typical 72 hours (with one laser active), minimum 40 hours					
Operating temperature	-10° to 50°C, 90% RH (non-condensing)					
Storage temperature	-30° to 60°C, 90% RH (non-condensing)					
Size (H x W x D)	14.0 x 8.1 x 3.8 cm (5.5 x 3.2 x 1.5 in)					
Weight	0.3 kg (0.66 lb)					

All specifications at 25°C.

OPM4-4D specifications

OPTICAL	OPM4-4D
Calibrated wavelengths	850, 980, 1310, 1490, 1550, 1625 nm
Detector type	Filtered InGaAs
Measurement range	+26 to -50 dBm
Tone detect range	+6 to -30 dBm +6 to -25 for 850 nm
Wavelength ID range	+6 to -30 dBm +6 to -25 dBm for 850 nm
Accuracy*	± 0.25 dB
Resolution	0.01 dB
Measurement units	dB, dBm, µW
GENERAL	
Power	2 x AA batteries
Battery life	300 hours
Operating temperature	-10 to 50°C, 90% RH (non-condensing)
Storage temperature	-30 to 60°C, 90% RH (non-condensing)
Size (H x W x D)	14.0 x 8.1 x 3.8 cm (5.5 x 3.2 x 1.5 in)
Weight	0.26 kg (0.58 lb)

* *Accuracy measured at 25ºC and -10 dBm per N.I.S.T. standards.*
All specifications at 25°C

NOYES Test & Inspection
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SLP4-6D Single-mode Test Kit with Wave ID and Set Reference

The SLP4-6D test kit combines the OPM4-4D optical power meter and OLS2-Dual LASER light source and is ideally suited for testing single-mode fiber optic networks.

The OLS2-Dual features 1310 nm and 1550 nm LASER output from a single output port and offers several modes of operation. Each wavelength may be transmitted individually at CW or with user selectable modulated Tone. Also, each wavelength may be transmitted with Wave ID. When transmitting with Wave ID, the OLS2-Dual supports transmitting pairs of wavelengths in an alternating pattern. Associated with each operating condition, the designated LED indicator will illuminate to identify the currently enabled operating mode and emitted wavelength(s) along with battery charge status and external power presence. The OLS2-Dual output port is equipped with a UCI based removable adapter to allow the output connector to be inspected and cleaned.

The OPM4-4D features automatic wavelength identification and switching (Wave ID) when used with the OLS2-Dual, multiple test Tone detection for fiber identification, and stores optical references for each calibrated wavelength. A large dual-wavelength LCD display with backlight shows measured power [dBm or µW] or insertion loss [dB], calibrated wavelengths [nm], tone signal [Hz], wavelength ID, and estimated remaining battery life. The OPM4-4D optical input port accepts a variety of Noyes thread-on style adapter caps (ordered separately) to meet a wide range of testing requirements.

The OPM4-4D and OLS2-Dual offer long battery life from common AA alkaline batteries. The SLP4-6D test kit is fully N.I.S.T. traceable.

Features

- Handheld, rugged, lightweight
- Wave ID (auto identification & switching)
- Dual or single Wave ID, CW, Tone
- 270 Hz, 330 Hz, 1 kHz, 2 kHz Tone
- Adjustable output
- Large LCD with backlight (OPM4-4D)
- Power measurements in dBm or µW; insertion loss in dB
- Reference power level storage
- Low battery indicator
- Long battery life with 2 x AA alkaline
- Cost-effective, easy to use
- N.I.S.T traceable

Applications

- Certify single-mode links per TIA/EIA standards
- Fiber identification prior to splicing

Ordering Information

MODEL	INCLUDES
SLP4-6D	OLS2-Dual optical light source, OPM4-4D optical power meter, AA batteries, protective rubber boots, adapter cap, SLP4-6D test kit user's guide, and carry case.

Test jumpers and connector adapters are required for operation (purchased separately). Test jumpers with a variety of connector styles and fiber types and adapter caps for most common connectors may be purchased from AFL Telecommunications.

NOYES Test & Inspection
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SLP4-6D Single-mode Test Kit with Wave ID and Set Reference

OLS2-Dual specifications

OPTICAL	OLS2-DUAL (SINGLE PORT)	
Wavelength	1310 ±20 nm	1550 ±20 nm
Emitter type	Laser, Class I FDA 21 CFR 1040.10 and 1040.11, IEC 60825-1: 2007-03	
Spectral width (FWHM)	5 nm (max)	
Output power	0 dBm*	
Output stability	± 0.05 dB over 1 hour (after 15 min. warm-up) ± 0.1 dB over 8 hours (after 15 min. warm-up)	
Tone output	270 Hz, 330 Hz, 1 kHz, 2 kHz	
GENERAL		
Power	2 x AA batteries, optional AC adapter	
Battery life	Typical 120 hours, minimum 75 hours	
Available adapters	SC FC, ST, LC	
Operating temperature	-10 to 50°C, 90% RH (non-condensing)	
Storage temperature	-30 to 60°C, 90% RH (non-condensing)	
Size (H x W x D)	14.0 x 8.1 x 3.8 cm (5.5 x 3.2 x 1.5 in)	
Weight	0.29 kg (0.65 lb)	

* *Adjustable 2 dB.*
All specifications at 25°C.

OPM4-4D specifications

OPTICAL	OPM4-4D
Calibrated wavelengths	850, 980, 1310, 1490, 1550, 1625 nm
Detector type	Filtered InGaAs
Measurement range	+26 to -50 dBm
Tone detect range	+6 to -30 dBm +6 to -25 for 850 nm
Wavelength ID range	+6 to -30 dBm +6 to -25 dBm for 850 nm
Accuracy*	± 0.25 dB
Resolution	0.01 dB
Measurement units	dB, dBm, µW
GENERAL	
Power	2 x AA batteries
Battery life	300 hours
Operating temperature	-10 to 50°C, 90% RH (non-condensing)
Storage temperature	-30 to 60°C, 90% RH (non-condensing)
Size (H x W x D)	14.0 x 8.1 x 3.8 cm (5.5 x 3.2 x 1.5 in)
Weight	0.26 kg (0.58 lb)

* *Accuracy measured at 25ºC and -10 dBm per N.I.S.T. standards.*
All specifications at 25°C

NOYES Test & Inspection
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MLP5-2 Multimode Test Kit with Wave ID, Set Reference, and Data Storage

The MLP5-2 test kit combines the OPM5-2D optical power meter and OLS1-Dual LED light source and is ideally suited for testing multimode fiber optic networks.

The OLS1-Dual features 850 and 1300 nm LED output from a single output port and is easy to operate with only a power button and a wavelength select button. Each wavelength may be transmitted individually at CW or with Wave ID. When transmitting with Wave ID, the OLS1-Dual supports transmitting pairs of wavelengths in an alternating pattern. Associated with each operating condition, the designated LED indicator will illuminate to identify the currently enabled operating mode and emitted wavelength(s) along with battery charge status and external power presence. The OLS1-Dual output port is equipped with UCI based removable adapters to allow the output connectors to be inspected and cleaned.

The OPM5-2D features automatic wavelength identification and switching (Wave ID) when used with the OLS1-Dual and stores optical references for each calibrated wavelength and up to 500 records per wavelength of power or insertion loss measurements. Using the supplied Windows® compatible software and USB connection, test records are transferred to a PC for analysis, printing, and storage. A large dual-wavelength LCD display with backlight shows measured power [dBm or µW] or insertion loss [dB], calibrated wavelengths [nm], tone signal [Hz], wavelength ID, and estimated remaining battery life. The OPM5-2D optical input port accepts a variety of Noyes thread-on style adapter caps (ordered separately) to meet a wide range of testing requirements.

The OLS1-Dual and OPM5-2D offer long battery life from common AA alkaline batteries with external AC adapter available as an option.
The MLP5-2 test kit is fully N.I.S.T. traceable.

Features

- Handheld, rugged, lightweight
- Wave ID (auto identification & switching)
- Dual or single Wave ID, CW
- Large LCD with backlight (OPM5-2D)
- Power measurements in dBm or µW; insertion loss in dB
- Reference power level storage
- Up to 500 records per wavelength storage
- USB port for download of stored records
- Windows® compatible software to view, print, and archive stored records
- Low battery indicator
- Long battery life with 2 x AA alkaline
- Free 50 µm and 62.5 µm mandrels
- Cost-effective, easy to use
- N.I.S.T traceable

Applications

- Certify multimode fiber links per TIA/EIA standards
- The 1300 nm output can also be used to test short distance (up to 10 km) single-mode fiber links

Ordering Information

MODEL	INCLUDES
MLP5-2	OLS1-Dual optical light source, OPM5-2D optical power meter, AA batteries, protective rubber boots, adapter cap, USB cable, Windows® compatible software and user's guide, 50 and 62.5µm mandrels, MLP5-2 test kit user's guide, and carry case.

Test jumpers and connector adapters are required for operation (purchased separately). Test jumpers with a variety of connector styles and fiber types and adapter caps for most common connectors may be purchased from AFL Telecommunications.

NOYES Test & Inspection
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MLP5-2 Multimode Test Kit with Wave ID, Set Reference, and Data Storage

OLS1-Dual specifications

OPTICAL	OLS1-DUAL (SINGLE PORT)	
Wavelength	850 ±30 nm	1300 +50/-10 nm
Emitter type	LED, Class I FDA 21 CFR 1040.10 and 1040.11, IEC 60825-1: 2007-03	
Spectral width	40 nm (typ)	120 nm (typ)
Output power	>-20 dBm*	
Output stability	± 0.1 dB over 8 hours (after 5 min. warm-up)	
Fiber size	62.5 µm**	
GENERAL		
Power	2 x AA batteries, optional AC adapter	
Battery life	Typical 30 hours, minimum 20 hours	
Available adapters	SC, FC, ST	
Operating temperature	-10 to 50°C, 90% RH (non-condensing)	
Storage temperature	-30 to 60°C, 90% RH (non-condensing)	
Size (H x W x D)	14.0 x 8.1 x 3.8 cm (5.5 x 3.2 x 1.5 in)	
Weight	0.29 kg (0.65 lb)	

* *Output power will be approximately 3 dB less if a 50 µm mandrel-wrapped jumper is used instead of a 62.5 µm mandrel-wrapped jumper.*

** *May be used to test 50 or 62.5 µm fiber with supplied mandrels.*

All specifications at 25°C.

OPM5-2D specifications

OPTICAL	OPM5-2D
Calibrated wavelengths	850, 1300, 1310, 1490, 1550 nm
Detector type	Germanium (Ge)
Measurement range	+6 to -60 dBm
Tone detect range	+6 to -50 dBm +6 to -45 dBm for 850nm
Wavelength ID range	+6 to -50 dBm +6 to -45 dBm for 850nm
Accuracy*	± 0.25 dB
Resolution	0.01 dB
Measurement units	dB, dBm, µW
GENERAL	
Power	2 x AA batteries, optional AC adapter
Battery life	300 hours
Operating temperature	-10 to 50°C, 90% RH (non-condensing)
Storage temperature	-30 to 60°C, 90% RH (non-condensing)
Size (H x W x D)	14.0 x 8.1 x 3.8 cm (5.5 x 3.2 x 1.5 in)
Weight	0.26 kg (0.58 lb)

* *Accuracy measured at 25ºC and -10 dBm per N.I.S.T. standards.*

All specifications at 25°C

NOYES Test & Inspection

A Division of **AFL Telecommunications**

MLP4-2 Multimode Test Kit with Wave ID and Set Reference

The MLP4-2 test kit combines the OPM4-2D optical power meter and OLS1-Dual LED light source and is ideally suited for testing multimode fiber optic networks.

The OLS1-Dual features 850 and 1300 nm LED output from a single output port and is easy to operate with only a power button and a wavelength select button. Each wavelength may be transmitted individually at CW or with Wave ID. When transmitting with Wave ID, the OLS1-Dual supports transmitting pairs of wavelengths in an alternating pattern. Associated with each operating condition, the designated LED indicator will illuminate to identify the currently enabled operating mode and emitted wavelength(s) along with battery charge status and external power presence. The OLS1-Dual output port is equipped with UCI based removable adapters to allow the output connectors to be inspected and cleaned.

The OPM4-2D features automatic wavelength identification and switching (Wave ID) when used with the OLS1-Dual and stores optical references for each calibrated wavelength. A large dual-wavelength LCD display with backlight shows measured power [dBm or µW] or insertion loss [dB], calibrated wavelengths [nm], wavelength ID, and estimated remaining battery life. The OPM4-2D optical input port accepts a variety of Noyes thread-on style adapter caps (ordered separately) to meet a wide range of testing requirements.

The OPM4-2D and OLS1-Dual offer long battery life from common AA alkaline batteries. The MLP4-2 test kit is fully N.I.S.T. traceable.

Features

- Handheld, rugged, lightweight
- Wave ID (auto identification & switching)
- Dual or single Wave ID, CW
- Large LCD with backlight (OPM4-2D)
- Power measurements in dBm or µW; insertion loss in dB
- Reference power level storage
- Low battery indicator
- Long battery life with 2 x AA alkaline
- Free 50 µm and 62.5 µm mandrels
- Cost-effective, easy to use
- N.I.S.T traceable

Applications

- Certify multimode fiber links per TIA/EIA standards
- The 1300 nm output can also be used to test short distance (up to 10 km) single-mode fiber links

Ordering Information

MODEL	INCLUDES
MLP4-2	OLS1-Dual optical light source, OPM4-2D optical power meter, AA batteries, protective rubber boots, adapter cap, 50 and 62.5µm mandrels, user's guide, and carry case.

Test jumpers and connector adapters are required for operation (purchased separately). Test jumpers with a variety of connector styles and fiber types and adapter caps for most common connectors may be purchased from AFL Telecommunications.

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continued on the next page

MLP4-2 Multimode Test Kit with Wave ID and Set Reference

OLS1-Dual specifications

OPTICAL	OLS1-DUAL (SINGLE PORT)	
Wavelength	850 ±30 nm	1300 +50/-10 nm
Emitter type	LED, Class I FDA 21 CFR 1040.10 and 1040.11, IEC 60825-1: 2007-03	
Spectral width	40 nm (typ)	120 nm (typ)
Output power	>-20 dBm*	
Output stability	± 0.1 dB over 8 hours (after 5 min. warm-up)	
Fiber size	62.5 µm**	
GENERAL		
Power	2 x AA batteries, optional AC adapter	
Battery life	Typical 30 hours, minimum 20 hours	
Available adapters	SC, FC, ST	
Operating temperature	-10 to 50°C, 90% RH (non-condensing)	
Storage temperature	-30 to 60°C, 90% RH (non-condensing)	
Size (H x W x D)	14.0 x 8.1 x 3.8 cm (5.5 x 3.2 x 1.5 in)	
Weight	0.29 kg (0.65 lb)	

* *Output power will be approximately 3 dB less if a 50µm mandrel-wrapped jumper is used instead of a 62.5µm mandrel-wrapped jumper.*

** *May be used to test 50 or 62.5µm fiber with supplied mandrels.*

All specifications at 25°C.

OPM4-2D specifications

OPTICAL	OPM4-2D
Calibrated wavelengths	850, 1300,1310, 1490, 1550 nm
Detector type	Germanium (Ge)
Measurement range	+6 to -60 dBm
Tone detect range	+6 to -50 dBm +6 to -45 for 850 nm
Wavelength ID range	+6 to -50 dBm +6 to -45 dBm for 850 nm
Accuracy*	± 0.25 dB
Resolution	0.01 dB
Measurement units	dB, dBm, µW
GENERAL	
Power	2 x AA batteries
Battery life	300 hours
Operating temperature	-10 to 50°C, 90% RH (non-condensing)
Storage temperature	-30 to 60°C, 90% RH (non-condensing)
Size (H x W x D)	14.0 x 8.1 x 3.8 cm (5.5 x 3.2 x 1.5 in)
Weight	0.26 kg (0.58 lb)

* *Accuracy measured at 25ºC and -10 dBm per N.I.S.T. standards.*

All specifications at 25°C

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MLP1 Fiber Optic Loss Test Kits

The MLP1 test kits are inexpensive solutions for testing multimode and single-mode systems. By joining the OPM 1 optical power meter and the OLS1 optical light source, the MLP1 is a great kit for beginners or network owners. Two versions of the MLP1 test kit are available for testing Premises networks, LAN, and Gigabit Ethernet. The MLP1-1S test kit includes the OPM1-2C power meter and OLS1-1C light source. The MLP1-2 test kit combines the OPM1-2C optical power meter and OLS1-2C optical light source

Features

- Multimode and Single-mode testing
- Loss measurements at 850 and 1300nm
- Includes 50 and 62.5 µm mandrels
- Field portable, battery operated
- Certify 50 or 62.5 µm multimode fiber links for any 850 or 1300nm application, including Gigabit Ethernet (GBE)
- N.I.S.T. traceable

Ordering Information

Model	Includes
All MLP1 models	Optical light source, optical power meter, protective rubber boots, adapter cap, 50 and 62.5µm mandrels, user's guide, and carrying case.

Test jumpers and connector adapters are required for operation (purchased separately). Test jumpers with a variety of connector styles and fiber types are available. Adapter caps for most common connectors may be purchased from AFL Telecommunications.

Specifications

Model	**MLP1-1S**		**MLP1-2**	
Optical Light Source	**OLS1-1C**		**OLS1-2C**	
Output ports	2		2	
Output wavelength	660 nm - red	850 + 35/-40nm	850 + 35/-40 nm	1300 + 50/-10 nm
Spectral width (typ) (FWHM)	30 nm	40 nm	40 nm	120 nm
Output power	-10 dBm*	>-20 dBm	-20 dBm	>-20 dBm
Stability (@25°C, 5 min. warm-up)	0.1 dB over 8 hours		0.1 dB over 8 hours	
Fiber size	1000 µm, 62.5 µm**		62.5 µm**	
Emitter type	LED, Class I FDA 21 CFR 1040.10 and 1040.11, IEC 60825-1: 2007-03			
Power	Typical 60 hours with 9V battery, optional AC adapter			
Connector	ST			
Size (H x W x D)	14.0 x 8.1 x 3.8 cm (5.5 x 3.2 x 1.5 in)			
Weight	0.65 lb (.29 kg)			

* -10 dBm output is into 1000 micron fiber.

** May be used to test 50 or 62.5µm fiber with supplied mandrels.

Optical Power Meter	**OPM1-2C**
Calibration wavelength	850, 1300, 1310, 1550 nm
Detector type	Germanium (Ge)
Dynamic range	+6 to -60 dBm
Accuracy (@ 25°C & -10.0 dBm)	±0.25 dB
Measurement units	dBm
Power	Typical 60 hours with 9V battery
Adapter caps	order separately (ST, SC, FC, and others available)
Size (H x W x D)	14.0 x 8.1 x 3.8 cm (5.5 x 3.2 x 1.5 in)
Weight	0.58 lb (0.26 kg)

General Kit Specifications	**MLP1-1S**	**MLP1-2**
Dynamic range: Multimode (62.5/125 µm) Single-mode (9/125 µm)	40 dB @ 850 nm	40 dB @ 850 & 1300 nm 20 dB @ 1300 nm
Weight	2. 9 lbs (1.3 kg)	
Dimensions (H x W x D)	23.4 x 34 x 10.7 cm (9.2 x 13.4 x 4.2 in)	
Operating temperature	-10 to 50°C	
Storage temperature	-30 to 60°C	

All specifications at 25°C

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CKSM-2 Contractor Series Multimode & Single-mode Test Kit with Set Reference

Combining the CSM1-2 optical power meter, CSS1-MM Dual LED light source, and CSS1-SM Dual LASER source, the CKSM-2 is a cost-effective test kit designed for performing insertion loss measurements on multimode as well as single-mode fiber optic links. Weighing only 0.4 lb each, units are compact and convenient for field use.

The CSS1-MM and CSS1-SM sources feature Dual output, 850/1300 nm LED or 1310/1550 nm LASER respectively, from a single output port. Both CSS1 models offer 2 modes of operation, continuous wave (CW) and user selectable modulated Tone. The CSS1-MM LED and CSS1-SM LASER output ports are stabilized to ensure accurate test results per current TIA/EIA requirements.A large LCD display with backlight shows emitted wavelengths [nm], tone frequency [Hz], and indicates a low battery condition. The CSS1-MM model output port is equipped with a fixed SC connector while the CSS1-SM output port is equipped with Universal Connector Interface (UCI) base and SC adapter.

The CSM1-2 optical power meter operates at 850/1300/1310/1550 nm and features multiple test Tone detection for fiber identification. The CSM1-2 stores optical references for each calibrated wavelength. A large LCD display with backlight shows measured power [dBm or µW] or insertion loss [dB], calibrated wavelengths [nm], tone frequency [Hz], and indicates a low battery condition. The CSM1 optical input port accepts a variety of Noyes thread-on style adapter caps (ordered separately) to meet a wide range of testing requirements. One adapter cap, 2.5mm Universal, is included.

The CSS1-MM, CSS1-SM, and CSM1-2 are fully N.I.S.T. traceable.

Features

- Palm-sized, rugged, lightweight
- CW and modulated Tone
- 270, 330, 1000, and 2000 Hz Tone
- Power measurements in dBm or µW; insertion loss in dB
- Reference power level storage
- Large LCD with backlight
- Automatic power-off function
- Battery gauge
- Long battery life with AA alkaline
- Free 50 µm and 62.5 µm mandrels
- Cost-effective, easy to use
- N.I.S.T traceable

Applications

- Certify multimode and single-mode fiber links per TIA/EIA standards
- Fiber identification prior to splicing

Ordering Information

MODEL	INCLUDES
CKSM-2	CSS1-MM Dual LED source, CSS1-SM Dual Laser souce, CSM1-2 optical power meter, AA batteries, 2.5mm universal adapter cap, UCI-SC connector, 50 and 62.5µm mandrels, user's guide, and carry case.

Test jumpers and connector adapters are required for operation (purchased separately). Test jumpers with a variety of connector styles and fiber types and adapter caps for most common connectors may be purchased from AFL Telecommunications. The CKSM kits may be packed with one of cleaning kit options (purchased separately) as follows:

MODEL	DESCRIPTION	INCLUDES
8500-20-0900	Wet Cleaning Kit	8500-10-0016, Cletop -SB
		CCTS-25-0900, Connector Cleaning Tips for 2.5mm ferrule in adapters or sockets (SC, FC, ST in adaptors).Blue (40 sticks per tube). Qty = 2 tubes
		FCC2-00-0900, Optical Quality Cleaning Fluid for fiber connector end faces.
8500-20-0901	Dry Cleaning Kit	8500-10-0016, Cletop -SB 8500-10-0024 ACT-01 2.5mm adapter cleaning tips – Qty = 200

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CKSM-2 Contractor Series Multimode & Single-mode Test Kit with Set Reference

CSS1-SM Specifications

OPTICAL	CSS1-SM (SINGLE PORT)
Output wavelength	1310 nm ±20 nm, 1550 nm ±20 nm
Spectral width (max)	5 nm
Output power	⩾ 0.0 dBm into 9/125 fiber
Emitter type	Laser, Class I FDA 21 CFR 1040.10 and 1040.11, IEC 60825-1: 2007-03
Output stability	± 0.05 dB typical over 1 hour (after 30 sec.) ± 0.15 dB over 8 hours (after 30 sec. typically)
Tone output	270, 330, 1000, 2000 Hz
GENERAL	
Output connector	SC, FC, ST, LC
Power	2 x AA batteries
Battery life	75 hours typical
Operating temperature	-10 to 50°C, 90% RH (non-condensing)
Storage temperature	-30 to 60°C, 90% RH (non-condensing)
Size (H x W x D)	11.4 x 6.4 x 3.2 cm (4.5 x 2.5 x 1.3 in)
Weight	0.18 kg (0.4 lb)

All specifications at 25°C.

CSS1-MM Specifications

OPTICAL	CSS1-MM (SINGLE PORT)	
Output wavelength	850 nm ±20 nm	1300 nm +40/-60 nm
Spectral width (max)	35 nm	170 nm
Output power	⩾ -20.0 dBm into 62.5/125 fiber	
Emitter type	LED, Class I FDA 21 CFR 1040.10 and 1040.11, IEC 60825-1: 2007-03	
Output stability	± 0.1 dB over 1 hour (after 30 sec typically) ± 0.15 dB over 8 hours (after 30 sec typically)	
Tone output	270, 330, 1000, 2000 Hz	
GENERAL		
Output connector	SC	
Power	2 x AA batteries	
Battery life	30 hours typical	
Operating temperature	-10 to 50°C, 90% RH (non-condensing)	
Storage temperature	-30 to 60°C, 90% RH (non-condensing)	
Size (H x W x D)	11.4 x 6.4 x 3.2 cm (4.5 x 2.5 x 1.3 in)	
Weight	0.18 kg (0.4 lb)	

All specifications at 25°C

CSM1-2 Specifications

OPTICAL	CSM1-2
Calibrated wavelengths	850, 1300, 1310, 1550 nm
Detector type	Germanium (Ge)
Measurement range	+6 to -60 dBm
Tone detect range	+6 to -50 dBm +6 to -45 dBm for 850 nm
Accuracy*	± 0.3 dB
Resolution	0.01 dB
Measurement units	dB, dBm, µW
GENERAL	
Power	2 x AA batteries
Battery life	> 300 hours
Operating temperature	-10 to 50°C, 90% RH (non-condensing)
Storage temperature	-30 to 60°C, 90% RH (non-condensing)
Size (H x W x D)	11.4 x 6.4 x 3.2 cm (4.5 x 2.5 x 1.3 in)
Weight	0.18 kg (0.4 lb)

**Accuracy measured at 25ºC and -10 dBm per N.I.S.T. standards.*
All specifications at 25°C

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CKM-2 Contractor Series Multimode Test Kit with Set Reference

Combining the CSM1-2 optical power meter and CSS1-MM Dual LED light source, the CMK-2 is a cost-effective test kit designed for performing insertion loss measurements on multimode fiber optic links. Weighing only 0.4 lb each, both units are compact and convenient for field use.

The CSS1-MM Dual light source features 850 nm and 1300 nm LED output from a single output port and offers 2 modes of operation, continuous wave (CW) and user selectable modulated Tone. The LED output is stabilized to ensure accurate test results per current TIA/EIA requirements and equipped with a fixed SC connector. A large LCD display with backlight shows emitted wavelengths [nm], tone frequency [Hz], and indicates a low battery condition.

The CSM1-2 optical power meter operates at 850/ 1300/ 1310/ 1550 nm and features multiple test Tone detection for fiber identification. The CSM1-2 stores optical references for each calibrated wavelength. A large LCD display with backlight shows measured power [dBm or µW] or insertion loss [dB], calibrated wavelengths [nm], tone frequency [Hz], and indicates a low battery condition. The CSM1 optical input port accepts a variety of Noyes thread-on style adapter caps (ordered separately) to meet a wide range of testing requirements. One adapter cap, 2.5 mm Universal, is included.

Both units offer a five-minute auto-off feature and long battery life from common AA alkaline batteries.

The CSM1-2 and CSS1-MM are fully N.I.S.T. traceable.

Features

- Palm-sized, rugged, lightweight
- CW and modulated Tone
- 270, 330, 1000, 2000 Hz Tone
- Power measurements in dBm or µW; insertion loss in dB
- Reference power level storage
- Large LCD with backlight
- Automatic power-off function
- Battery gauge
- Long battery life with AA alkaline
- Free 50 µm and 62.5 µm mandrels
- Cost-effective, easy to use
- N.I.S.T traceable

Applications

- Certify 50 or 62.5 µm multimode fiber links for any 850 or 1300 nm application, including Gigabit Ethernet (GBE), per TIA/EIA standards
- Fiber identification prior to splicing

Ordering Information

MODEL	INCLUDES
CKM-2	CSS1-MM dual optical light source, CSM1-2 optical power meter, AA batteries, 2.5 mm Universaladapter cap, 50 and 62.5 µm mandrels, user's guide, and carry case.

Test jumpers and connector adapters are required for operation (purchased separately). Test jumpers with a variety of connector styles and fiber types and adapter caps for most common connectors may be purchased from AFL Telecommunications.

The CKM-2 kits may be packed with one of cleaning kit options (purchased separately) as follows:

MODEL	DESCRIPTION	INCLUDES
8500-20-0900	Wet Cleaning Kit	8500-10-0016, Cletop -SB
		CCTS-25-0900, Connector Cleaning Tips for 2.5mm ferrule in adapters or sockets (SC, FC, ST in adaptors).Blue (40 sticks per tube). Qty = 2 tubes
		FCC2-00-0900, Optical Quality Cleaning Fluid for fiber connector end faces.
8500-20-0901	Dry Cleaning Kit	8500-10-0016, Cletop -SB 8500-10-0024 ACT-01 2.5mm adapter cleaning tips – Qty = 200

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CKM-2 Contractor Series Multimode Test Kit with Set Reference

CSS1-MM Specifications

OPTICAL	CSS1-MM (SINGLE PORT)	
Output wavelength	850 nm ±20 nm	1300 nm +40/-60 nm
Spectral width (max)	35 nm	170 nm
Output power	⩾ -20.0 dBm into 62.5/125 fiber	
Emitter type	LED, Class I FDA 21 CFR 1040.10 and 1040.11, IEC 60825-1: 2007-03	
Output stability	± 0.1 dB over 1 hour (after 30 sec typically) ± 0.15 dB over 8 hours (after 30 sec typically)	
Tone output	270, 330, 1000, 2000 Hz	
GENERAL		
Output connector	SC	
Power	2 x AA batteries	
Battery life	30 hours typical	
Operating temperature	-10 to 50°C, 90% RH (non-condensing)	
Storage temperature	-30 to 60°C, 90% RH (non-condensing)	
Size (H x W x D)	11.4 x 6.4 x 3.2 cm (4.5 x 2.5 x 1.3 in)	
Weight	0.18 kg (0.4 lb)	

All specifications at 25°C

CSM1-2 Specifications

OPTICAL	CSM1-2
Calibrated wavelengths	850, 1300, 1310, 1550 nm
Detector type	Germanium (Ge)
Measurement range	+6 to -60 dBm
Tone detect range	+6 to -50 dBm +6 to -45 dBm for 850 nm
Accuracy*	± 0.3 dB
Resolution	0.01 dB
Measurement units	dB, dBm, µW
GENERAL	
Power	2 x AA batteries
Battery life	> 300 hours
Operating temperature	-10 to 50°C, 90% RH (non-condensing)
Storage temperature	-30 to 60°C, 90% RH (non-condensing)
Size (H x W x D)	11.4 x 6.4 x 3.2 cm (4.5 x 2.5 x 1.3 in)
Weight	0.18 kg (0.4 lb)

**Accuracy measured at 25ºC and -10 dBm per N.I.S.T. standards.*
All specifications at 25°C

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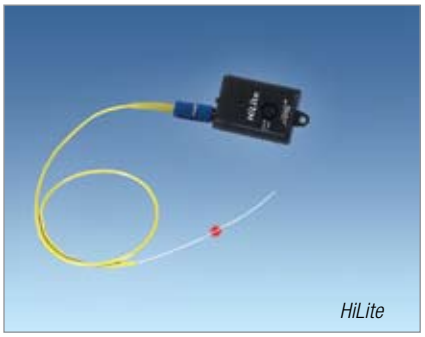
VFI 2


HiLite

HiLite and VFI2 Visual Fault Identifiers

The HiLite and VFI2 are compact and powerful visible red laser sources designed to troubleshoot faults on fiber optic cables. Light generated by these units will escape from sharp bends and breaks in jacketed or bare fibers, as well as poorly mated connectors. They enable technicians to quickly identify faults in fiber optic jumper cables, distribution frames, patch panels, and splice trays.

The HiLite and VFI2 are an excellent complement to an OTDR because they can locate faults inside the OTDR's dead-zone. Other applications include end-to-end continuity checks, identifying connectors in patch panels and fibers during splicing operations. The universal connector interface provides fast operation with many connector styles without changing an adapter.

Features

- Visible red laser source, 650 nm
- High power, 1 mW
- Compact size
- Universal connector interface for quick connection
- 2.5 mm Universal adapter included

Specifications

OPTICAL	VFI2	HILITE
Emitter type	Laser, Class II FDA 21 CFR 1040.10 and 1040.11, IEC 60825-1:2007-03	
Wavelength	650 nm ± 10 nm	
Output power	1 mW (into single-mode fiber)	
Modulation	2 Hz or CW selected	2 Hz
GENERAL		
Adapter	2.5 mm Universal	
Power	2 AA alkaline batteries (60 hours typical)	1 AAA alkaline battery (16 hours typical)
Operating temperature	-10 to 50°C, 85% humidity non condensing	
Storage temperature	-30 to 60°C, 95% humidity non condensing	
Size (H x W x D)	14.0 x 6.2 x 3.2 cm (5.5 x 2.4 x 1.3 in)	7.0 x 3.6 x 1.5 cm (2.8 x 1.4 x 0.6 in)
Weight	< 200 g (7.06 oz)	50 g (1.75 oz)

Ordering Information

MODEL	INCLUDES
VFI2	VFI2 unit, instruction card, and carrying case
HiLite	HiLite unit, instruction card, and carrying case

Available Adapters

MODEL	DESCRIPTION
2900-50-0007MR	2.5 mm Universal adapter [1] with captivated sleeve
2900-50-0010MR	1.25 mm Universal adapter [2] with captivated sleeve

1 2.5 mm Universal adapter accepts SC, FC, ST, E2000, etc. ferrules.
2 1.25 mm Universal adapter accepts LC, MU, etc. ferrules.

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MT Tracer
12-Fiber Visible Laser Source & Display

The MT Tracer is a compact multi-fiber visual fault identifier (red laser source) supporting 8 or 12 fiber MTP® connections. The user simply connects the 12-fiber cable directly to the unit. Fibers can be tested individually or all at once. By progressing sequentially through the fibers, cables can be quickly checked for polarity by verifying the proper order at the output.

The MT Tracer Display is a passive optical device designed to receive the light from the MT Tracer Source and provide an eye-safe method of viewing the red light. Identification is accomplished by expanding the output of the MT ferrule to a large easy to read panel - large enough to be read from several feet away.

Features

- Viewing safe for eyes
- CW or 2Hz output
- Direct connect - No fan-outs necessary
- Test 8 and 12 fiber MTP® assemblies
- Test polarity, continuity, and fiber mis-match

Specifications

MT Tracer Source Specifications	
Optical Wavelength	650 ± 10nm
Output Power Level	min 0.5mW & typ. 1.0mW (at each SM 9/125 fiber at the end of MTP patchcord)
Optical Connector	MTP® male SM, angled
No. of output fibers	12
Power	2 x AA alkaline batteries, optional AC adapter
Battery life (alkaline)	40 hrs.
Low Battery	Indicated by 2 Hz LED blinking
Operation Temperature	0 to 40°C, RH 85% non-condensing
Storage Temperature	-30 to 50°C, RH 95% non-condensing
Dimensions	9.9 x 3.8 x 14.3cm (3.9 x 1.5 x 5.6in)
Weight	0.29kg (0.63lb)
MT Tracer Display Specifications	
Input Connector	MTP® angled male 62.5µ fiber
No. of input connectors	1 (12-fiber MTP)
Power Consumption	NA
Operation Temperature	0 to 40°C. RH 85% non-condensing
Storage Temperature	-30 to 50°C, RH 95% non-condensing
Dimensions	9.9 x 3.8 x 14.3cm (3.9 x 1.5 x 5.6in)
Weight	0.18kg (0.4lb)

Ordering Information

Model	**Includes**
MT Tracer Kit	MT Tracer Source, MT Tracer Display, batteries, instruction card, and carry case.

NOYES
Test & Inspection

OFI-FTTx Active ONT Detector

The OFI-FTTx is a rugged, handheld optical fiber identifier designed to identify the presence or absence of an active Optical Network Terminal (ONT) on FTTx F2 fibers at the Fiber Distribution Hub (FDH). During a test the F2 fiber does not have to be removed from service. Thus the OFI-FTTx can verify whether a splitter pigtail at the FDH is connected to an active circuit before it is disconnected for fault location or re-use. The OFI-FTTx can help verify FTTx network records and recover splitter pigtails and F2 fibers that are connected at the FDH but, in fact, are available for new customers.

When applied to a splitter pigtail at the FDH, the OFI FTTx will report either that the ONT is 'Active' or 'Not Detected'. Time to complete each test is typically one second.
The OFI-FTTx is compatible with 2mm jumper cable containing standard single-mode fiber, such as SMF-28e ®, or bend insensitive fiber (BIF) with a 15mm bend radius specification, such as AFL Bend Insensitive.

The OFI-FTTx is powered by two standard AA alkaline batteries, provides a low battery indication, and can typically be operated 800 times before battery replacement is necessary.

Features

- Rugged, handheld, lightweight
- In-service detection of upstream (1310 nm) activity on FTTx networks
- Determines which unparked splitter pigtails are connected to ONTs
- Does not require travel to customer (ONT) site
- Does not require disconnect of splitter pigtails
- Visual and audible indicators
- Battery operated
- Low battery indication

Ordering Information

MODEL	INCLUDES
OFI-FTTx	OFI-FTTx, user's guide, and carry case

Patent Pending

Applications

- FACILITY RECOVERY: Harvest unparked splitter legs and F2 fibers not connected to subscribers.
- TROUBLE-SHOOTING: Real-time confirmation of OLT to ONT connectivity at the FDH.

Specifications

MODEL	OFI-FTTX
Network Types	FTTx BPON, GPON, EPON, ≥ 1:4 splitter ratio
Network Locations	Between splitter and customer ONT
Fiber Type	2mm jacketed SMF-28e ®, 15mm bend radius AFL Bend Insensitive, and equivalents
Induced Loss (Typ)	< 1 dB @ 1550 nm
Test Time (Typ)	1 sec
Operating Range*	Loss from ONT to FDH: 0 to 7 dB (BPON), 0 to 9 dB (GPON, EPON)
User interface	Audio indicator and four red LEDs
Power	2 x AA batteries
Battery Life	800 tests typical
Operating Temperature	-10 to 40°C
Storage Temperature	-20 to 50°C
Dimensions (H x W x D)	22 x 3.8 x 3.2 cm (8.5 x 1.5 x 1.25 in)
Weight	0.23 kg (0.5 lbs)

** Maximum values are typical and depend on fiber type and jacket material.*

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OFI 200

OFI 400

OFI Optical Fiber Identifiers

Noyes Optical Fiber Identifiers are rugged, handheld, and easy-to-use fiber optic test instruments designed to detect optical signals transmitted through a single-mode fiber without disrupting traffic. During installation, maintenance, rerouting, or restoration; it is often necessary to isolate a specific fiber. By simply clamping an Optical Fiber Identifier onto a gently bent fiber, the unit will indicate if there is [No Signal], [Tone], or [Traffic] and identify signal direction.

The OFI 200 model and OFI 400 model Identifiers are equipped with a unique two-position head design that can be configured to work with 250 µm, 900 µm, ribbon, or jacketed fiber in seconds, without tools or adjustments. When testing coated fibers, the slim design of the OFI 200 and OFI 400 models allows easier access on a splice tray where the amount of work space is limited. The clamping trigger is ergonomically designed to fit the natural motion of the operator's hand. A high impact molded plastic case makes the OFI models suitable for use outside plant or in the central office.

The OFI 400 model is the next generation of Noyes Optical Fiber Identifiers. It has all the features of the OFI 200 model plus easy-to-read LCD display with Backlight, multiple [TONE] signal detection (270 Hz, 330 Hz, 1 kHz, or 2 kHz), power saving feature, and [Set Reference] feature. The OFI 400 model also measures and displays fiber core power or relative power on an LCD display.

Both models are battery operated with the battery indication feature and perform thousands of tests before batteries replacement is necessary.

Features

- Rugged, handheld, lightweight
- Accepts 250 µm, 900 µm coated fiber, 3 mm jacketed fiber cable, and ribbon fiber
- No head swapping or adjustments
- Identifies light carrying fiber
- Low insertion loss - traffic remains uninterrupted
- Indicates direction of traffic
- Indicates Tone signal visually and audibly
- 2 kHz Tone detection - OFI 200 models
- 270 Hz, 330 Hz, 1 kHz, and 2 kHz Tone detection - OFI 400 models
- Easy-to-read LCD display with Backlight - OFI 400 models
- Measures fiber core or relative power - OFI 400 models
- Power Off and Set Reference feature - OFI 400 models
- Battery operated
- Low battery indication
- Low cost, easy to use

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continued on the next page

OFI Optical Fiber Identifiers

Applications

- Live fiber identification - used during installation, maintenance, rerouting, or restoration to positively identify fibers prior to cutting and splicing
- Tone detection
- The OFI 400 models may also be used for measuring core power or relative power

Ordering Information

Model	Includes
OFI 200D	User's guide and carry case
OFI 400	User's guide and carry case

Specifications

Detectable signal range				
Fiber Type	**Parameter**	**Wavelength, Signal**	**OFI 200D**	**OFI 400**
250 µm coated fiber (SMF-28 with 250 µm CPC6 coating)	Minimum detect level (average power, typical)	1310 nm, CW or Traffic 1310 nm, Tone 1550 nm, CW or Traffic 1550 nm, Tone	-40 dBm -43 dBm -45 dBm -50 dBm	-45 dBm -45 dBm -50 dBm -50 dBm
	Insertion loss (typical)	1310 nm 1550 nm	0.6 dB 2.5 dB	0.6 dB 2.5 dB
3 mm jacketed fiber (SMF-28 with 250 µm CPC6 coating and 3 mm, yellow jacket)	Minimum detect level (average power, typical)	1310 nm, CW or Traffic 1310 nm, Tone 1550 nm, CW or Traffic 1550 nm, Tone	-30 dBm -32 dBm -33 dBm -37 dBm	-30 dBm -30 dBm -33 dBm -33 dBm
	Insertion loss (typical)	1310 nm 1550 nm	0.8 dB 2.5 dB	1.0 dB 2.8 dB

Optical Specifications		
Model	**OFI 200D**	**OFI 400**
Detector type	InGaAs	
Wavelength range	800 - 1700 nm	
Calibrated size of fiber and wavelength	N/A	250 µm (SMF-28) @1550 nm
Fiber stress	<100 kPSI max	
Fiber size	250 µm, 900 µm, 2 mm or 3 mm jacketed & ribbon fiber	
Tone detection	2000 ±100Hz	270, 330, 1000, or 2000 Hz (±5%)
Core power measurement range	N/A	+13 dBm to – 50 dBm SMF28/28E 250um @ 1550nm
Measurement units	N/A	dBm, dB

General Specifications		
Display Type	N/A	Multi 7 segment LCD; 3 LEDs; 1 piezo buzzer
Power	1 x 9V Alkaline	2 x 1.5V Alkaline
Battery life	>10,000 operations typical	>10,000 operations typical
Operation temperature	0° to 50°C 90% RH (Non-condensing)	
Storage temperature	-30 to +60°C 90% RH (Non-condensing)	
Dimensions (H x W x D)	8.5 x 1.5 x 1.1 in. (22 x 3.8 x 2.8 cm)	
Weight	7.5 oz. (210 g)	6 oz (168 g)

Notes:

1 250 µm coated fiber parameters are specified with OFI plunger in the "250/900/RIB" position.
2mm/ 3mm jacketed fiber parameters are specified with OFI plunger in the "2 mm/ 3 mm" position.

2 Unless noted otherwise, all specifications are typical. Actual results can vary by several dB depending on fiber type, coating material, jacket color, jacket hardness, and other factors.
All specifications stated above are as measured at 25°C.

3 [CW] is a light signal that is not modulated.
[Traffic] is a light signal modulated by a random data sequence.
[Tone] is a light signal modulated into a nominal 50% duty cycle square wave.

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DFS1 Digital FiberScope

DFS1 Digital FiberScope with M200 OTDR

NOYES®

DFS1 Digital FiberScope

The DFS1 Digital FiberScope supports magnified video inspection of optical fiber connector end-faces during fiber optic cable and connector installation and maintenance. The ergonomically designed hand-held unit illuminates fiber end-faces and delivers magnified images via USB port to AFL's M-series OTDRs (M200, M700) or C-series OTDRs and Certification Testers (C840, C850, C860, C880). FiberScope software displays, labels, and stores captured images as part of connector installation and/or maintenance records.

A large adjustment knob permits easy focusing using real-time view. Once focused, a conveniently located trigger button signals the attached display device to capture the image for analysis and archiving. The scope's ergonomic shape and control locations support comfortable, single-handed operation.

The DFS1 is powered through the USB port, eliminating the need for an additional battery or AC power supplies. Electronic video inspection eliminates all danger of eye damage from active (lit) fibers carrying either visible or infrared wavelengths.

An extensive assortment of adapters supports inspection of a wide range of optical jumper cable connector ferrules and bulkhead adapters. Bulkhead adapter tips are available in multiple lengths as well as 60° angle. Connector adapters are available for PC, UPC, or APC polished ferrules in 1.25 mm, 2.5 mm and other diameters.

The DFS1 is available in three different kits which provide either PC/UPC adapters, APC adapters, or no adapters. All kits include soft carry case, an adapter tip storage box, quick reference guide, plus FiberScope display software update for M200, M700, C840, C850, C860, and C880.

Features

- Ergonomic, hand-held design
- Single-handed operation
- 400x magnification
- Fast, easy focus and display capture
- Video output via USB port to M200, M700, C840, C850, C860, or C880
- Powered from USB; no batteries required
- Extensive assortment of interchangeable fiber connector and bulkhead adapter tips
- Adapter tips easily changed; no tools required

Applications

- Ideal for Telco, Broadband, and Enterprise applications
- Optical connector and bulkhead adapter inspection
- Display and analyze fiber end-face quality on M200, M700, C840, C850, C860, or C880
- Visually inspect fiber end-faces for damage or contamination impairing optical transmission
- Generate installation inspection records, associating captured digital photo with fiber ID

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DFS1 Digital FiberScope

DFS1 Digital FiberScope with M700 OTDR

Specifications (All specifications valid at 25°C unless otherwise specified)

MODEL	DFS1
Magnification	400X
Field of View	~400 µm x 300 µm
Resolution	0.5 µm detectable
Operating Temperature	0 °C to 50 °C
Storage Temperature	-20 °C to 70 °C
Focus	Manual adjustment, 2 mm max travel
Dimensions	35 mm diameter x 175 mm length (without tip)
Weight	200 g
Light Source	Blue LED
Power Supply	USB port of M-series OTDRs or C-series OTDRS and Certification Testers

DFS1-00-04XU

Ordering Information

The DFS1 is available in three different kits which provide either PC/UPC adapters, APC adapters, or no adapters. All kits include soft carry case, a storage box to hold up to six adapter tips, FiberScope display software update for M series OTDRs (M200, M700) or C series OTDRs and Certification Testers (C840, C850, C860, C880), and a quick reference guide.

MODEL	DESCRIPTION
DFS1-00-04XU	**DFS1 Digital FiberScope PC/UPC Inspection Kit**; includes: (1) DFS1-00-04X0MR DFS1 USB Digital FiberScope (1) DFS1-00-0001MR Universal 1.25 mm male PC adapter tip (1) DFS1-00-0002MR Universal 2.5 mm male PC adapter tip (1) DFS1-00-0003MR SC and FC female bulkhead adapter tip (1) DFS1-00-0004MR LC female bulkhead adapter tip (1) DFS1-04-0001MZ soft carry case for scope and adapters (1) 8500-05-0001MZ One-Click Cleaner SC, ST, FC (1) 8500-05-0002MZ One-Click Cleaner LC/MU (1) 1400-01-0093MZ 6-compartment adapter tip storage box (1) Digital FiberScope display software update for M200, M700, C840, C850, C860, or C880
DFS1-00-04XA	**DFS1 Digital FiberScope APC Inspection Kit**; includes: (1) DFS1-00-04X0MR DFS1 USB Digital FiberScope (1) DFS1-01-0002MR Universal 2.5 mm male APC adapter tip (1) DFS1-01-0003MR SC/APC and FC/APC bulkhead adapter tip (1) DFS1-01-0011MR SC/APC bulkhead adapter tip (1) DFS1-04-0001MZ soft carry case for scope and adapters (1) 8500-05-0001MZ One-Click Cleaner SC, ST, FC (1) 1400-01-0093MZ 6-compartment adapter tip storage box (1) Digital FiberScope display software update for M200, M700, C840, C850, C860, or C880
DFS1-00-04XN	**DFS1 USB Digital Fiber Inspection Kit without Adapters;** includes: (1) DFS1-00-004X0MR DFS1 USB Digital FiberScope (1) Soft carry case for scope and adapters (1) 6-compartment adapter tip box (1) Digital FiberScope display software update for M200, M700, C840, C850, C860, or C880

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DFS1 Digital FiberScope

DFS1-00-0001MR

DFS1-00-0002MR

DFS1-00-0003MR

DFS1-00-0004MR

DFS1-00-0013MR

Ordering Information (continued)

DFS1 Accessories

MODEL	DESCRIPTION
DFS1-04-0001MZ	Soft carry case for DFS1 Digital FiberScope and adapters
1400-01-0093MZ	6-compartment adapter tip storage box
1400-01-0094MZ	11-compartment adapter tip storage box
8500-05-0001MZ	One-Click Cleaner SC, ST, FC
8500-05-0002MZ	One-Click Cleaner LC/MU

DFS1 Adapter Tips

The following table identifies commonly required adapter tips. Other adapter tips available. Please consult the factory for additional adapter tips and prices.

MODEL	DESCRIPTION
PC FERRULE CONNECTOR ADAPTER TIPS	
DFS1-00-0001MR	Universal 1.25 mm tip for PC ferrule connector
DFS1-00-0002MR	Universal 2.5 mm tip for PC ferrule connector
DFS1-00-0005MR	Universal 2.0 mm tip for PC ferrule connector
DFS1-00-0006MR	Slim 1.6 mm tip for PC ferrule (termini)
DFS1-00-0038MR	Slim 1.25 mm probe tip for LuxCis and termini
DFS1-00-0039MR	Slim 2.5 mm PC ferrule tip for ELIO and termini
DFS1-00-0008MR	Tip for ELIO 1.25 mm ferrule connector
SC/PC AND FC/PC BULKHEAD ADAPTER TIPS	
DFS1-00-0003MR	Tip for SC/PC and FC/PC bulkhead adapter
DFS1-00-0010MR	Short extended tip for SC/PC and FC/PC bulkhead adapter
DFS1-00-0011MR	Medium extended tip for SC/PC and FC/PC bulkhead adapter
DFS1-00-0012MR	Long extended tip for SC/PC and FC/PC bulkhead adapter
DFS1-00-0013MR	60° angled tip for SC/PC and FC/PC bulkhead adapter
DFS1-00-0040MR	60° angled tip for SC/PC bulkhead adapter
ST/PC BULKHEAD ADAPTER TIPS	
DFS1-00-0014MR	Tip for ST/PC bulkhead adapter
DFS1-00-0015MR	Short extended tip for ST/PC bulkhead adapter
DFS1-00-0016MR	Medium extended tip for ST/PC bulkhead adapter
DFS1-00-0017MR	Long extended tip for ST/PC bulkhead adapter
DFS1-00-0018MR	60° angled tip for ST/PC bulkhead adapter
LC/PC BULKHEAD ADAPTER TIPS	
DFS1-00-0004MR	Tip for LC/PC bulkhead adapter
DFS1-00-0019MR	Short extended tip for LC/PC bulkhead adapter
DFS1-00-0020MR	Medium extended tip for LC/PC bulkhead adapter
DFS1-00-0021MR	Long extended tip for LC/PC bulkhead adapter
DFS1-00-0022MR	60° angled tip for LC/PC bulkhead adapter
E2000/PC BULKHEAD ADAPTER TIPS	
DFS1-00-0023MR	Short extended tip for E2000/PC bulkhead adapter
DFS1-00-0024MR	Medium extended tip for E2000/PC bulkhead adapter

DFS1 Digital FiberScope

Ordering Information (continued)

MODEL	DESCRIPTION
DFS1-00-0025MR	Long extended tip for E2000/PC bulkhead adapter
MU/PC BULKHEAD ADAPTER TIPS	
DFS1-00-0026MR	Tip for MU/PC bulkhead adapter
DFS1-00-0027MR	Short extended tip for MU/PC bulkhead adapter
DFS1-00-0028MR	Medium extended tip for MU/PC bulkhead adapter
DFS1-00-0029MR	Long extended tip for MU/PC bulkhead adapter
DFS1-00-0030MR	60° angled tip for MU/PC bulkhead adapter
MTP/PC MULTI-FIBER ADAPTER TIPS (FERRULE & BULKHEAD)	
DFS1-00-0037MR	MTP/PC ferrule and bulkhead adapter extended tip; includes base plus MTP/PC front end tip
DFS1-00-0041MR	Front end tip for MTP/PC ferrule and bulkhead adapter
DFS1-00-0042MR	MTP/PC and MTP/APC ferrule and bulkhead adapter extended tip kit; includes base plus MTP/PC and MTP/APC front end tips
MISCELLANEOUS PC BULKHEAD ADAPTER TIPS	
DFS1-00-0031MR	Tip for LEMO 2.0 mm bulkhead adapter
DFS1-00-0032MR	Tip for LX.5/PC bulkhead adapter
DFS1-00-0033MR	Tip for 2.0 mm termini bulkhead adapter
DFS1-00-0034MR	Tip for 1.6 mm termini bulkhead adapter
DFS1-00-0036MR	Tip for ELIO 1.25 mm bulkhead adapter
APC TIPS	
DFS1-01-0001MR	Universal 1.25 mm tip for APC ferrule connector
DFS1-01-0002MR	Universal 2.5 mm tip for APC ferrule connector
DFS1-01-0003MR	Tip for SC/APC and FC/APC bulkhead adapter
DFS1-01-0011MR	Tip for SC/APC bulkhead adapter
DFS1-01-0004MR	Tip for LC/APC bulkhead adapter
DFS1-01-0005MR	Short extended tip for SC/APC bulkhead adapter
DFS1-01-0006MR	60° angled tip for SC/APC bulkhead adapter
DFS1-01-0008MR	Tip for E2000/APC bulkhead adapter
DFS1-01-0009MR	Tip for LX.5/APC bulkhead adapter
DFS1-01-0010MR	MTP/APC ferrule and bulkhead adapter extended tip kit; includes base plus MTP/APC front end tip
DFS1-01-0012MR	Front end tip for MTP/APC ferrule and bulkhead adapter

OFS 300 Optical Fiber Scope

The Noyes OFS 300 from AFL Telecommunications is a versatile Optical Fiber Scope with precision 200X magnification. This handheld and rugged scope is used for inspection of optical fiber connectors for scratches, dirt, or other problems normally associated with poor transmission performance.

A built-in laser safety filter provides > 40 dB IR protection to reduce risk of injury to the eye if accidentally viewing an active fiber.* The OFS 300 features a universal adapter cap mount that accepts a variety of Noyes thread-on style adapter caps (ordered separately) to ease inspection of many connector style. A momentary power switch located on the top panel keeps one hand free for focusing.

The OFS 300 offers 60 hours of continuous battery life from standard 2 x AA batteries and features an LED indicator, which will flash when barriers require replacement.

Features

- Laser safety filter installed*
- Precision 200X zoom
- Universal adapter interface
- Low battery LED indicator
- Long battery life with 2 x AA alkaline
- Tripod mount
- Rugged, handheld, easy to use

**Always follow your company's laser safety procedures and never use an optical microscope to view live fiber optic connectors.*

Specifications

OPTICAL SPECIFICATIONS	
Nominal magnification	200X
Adapter mount	Universal, thread-on
Safety filter	Schott KG3, > 40 dB IR

GENERAL SPECIFICATIONS	
Operating temperature	0 to +50°C
Storage temperature	-20 to +50°C
Power	2 x AA batteries
Battery life	> 60 hours
Weight in use	0.67 kg (1.5 lbs)
Size (H x W x D)	13 x 5 x 20 cm (5 x 2 x 8 in)

Ordering Information

MODEL	INCLUDES
OFS 300	OFS 300 Inspection Scope, 2 x AA batteries, neck strap, 2.5 mm universal adapter cap, and user's guide

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VS 300 View Safe Inspection Scope

The VS 300 Video Fiber Scope removes concerns for eye safety while inspecting optical fiber connectors. The design eliminates the optical path to the eye by utilizing a miniature camera and a state-of-the-art micro-display that achieves unparalleled clarity and resolution.

The VS 300 is modeled after the functionality of our highly successful OFS 300 product line with the following improvements:

- The VS 300 has no optical path to the user's eye.
- The VS 300 has NTSC video output.
- The VS 300 has the familiar shape and control positions of the OFS 300 but is half the weight and has a molded easy grip case with easy access battery compartment.

The magnification of the unit is equivalent to 400X (23-degree field of view comparable to 8" monitor viewed at a distance of 20") and provides 600X when its video output is displayed on a 12" monitor. The unit uses all the OFS 300 adaptor caps and has an energy saving automatic shutoff.

Features

- Video Technology
- No optical path to your eye
- 400X magnification
- Resolves ¾ micron scratches
- Universal Adaptor Interface with new "pan and lock" centering mount
- Video Output

Specifications

Optical Specifications	
Magnification	400X equivalent to 8" monitor for 20" distance, 600X on 12" monitor
Adaptor mount	Thread-on (Universal)
Safety filter	Not Required - No optical path to user
Video output	NTSC

General Specifications	
Operating temperature	0 to +50°C
Storage temperature	-20 to +60°C
Humidity	0 to 90% (non - condensing)
Power supply	2 AA alkaline batteries, optional AC adapter
Battery life	10 hours continuous
Indicators	Low battery
Weight	0.94 lbs (0.42 kg)
Size (H x W x D)	3.5 x 1.5 x 8.5 in (8.9 x 3.8 x 21.6 cm)

Ordering Information

Model	**Includes**
VS 300	VS 300 Inspection Scope, 2 x AA batteries, neck strap, 2.5 mm universal adapter cap, and user's guide

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VFS 2 Video Fiber Scope 2nd Generation

The VFS 2 is a small versatile video fiber scope, which retains the superior image quality associated with Noyes inspection products. The unique “optical-knuckle” allows the user to orient the probe head in virtually any direction. This feature allows the user to view connectors that may be located in tight or difficult locations. With a probe head length of less than 8 cm (3.25”), access into crowded/cramped quarters becomes a reality.

The VFS 2 resolves ¾ micron scratches, keeping with our standard of quality end-face images. This unit is designed for one-handed operation and with the “optical-knuckle” feature, the unit is equally easy for both right and left handed individuals.

The VFS 2 probe may be paired with the VFS 2 high-resolution 3.5” Display unit.

Also, the VFS 2 Inspection Probe may be used with the VCP 1 Video Capture Port, which allows the user to inspect fiber optic end-faces and capture viewed images on a PC.

Features:

- Unparalleled access to connectors and bulkhead adapters
- One-handed operation
- Resolves ¾ micron scratches
- Precision adapter tips for easy centering
- 350-micron field of view (diagonal)
- Smooth, precision focusing (left or right handed)
- Advanced lithium ion battery

Specifications

Optical Specifications	
Field of view	350 microns diagonal (208 µm vertical, 285 µm horizontal)
Magnification	250X on 3.5” display
Resolution	¾ micron scratch
Video Output	NTSC

VFS 2 Probe Specifications	
Operating temperature	0 to +50°C
Storage temperature	-20 to +60°C
Humidity	0 to 90% (non-condensing)
Probe weight	0.4 lb (0.2 kg)
Probe body size (L x W x D)	6.3 x 1.3 x 1.3 in (15.9 x 3.3 x 3.3 cm)
Probe head size (with FC adapter), (L x W x D)	3.1 x 1.0 x 0.6 in (7.9 x 2.5 x 1.5 cm)

VFS 2 Display specifications	
Display Screen Size	3.5 inch TFT NTSC
Display package with protective boot size	9.0 x 2.0 x 4.7 in (22.9 x 5.1 x 11.9 cm)
Weight	2 lb (0.9 kg)
Power	Li-Ion battery pack or AC adapter
Battery life with VFS2 probe	> 4 hours
Operating temperature	0° to 50° C
Storage temperature	-20 to +60°C
Humidity	0 to 90% RH non-condensing
Li-Ion battery pack charging temp.	-10 to +45°C
Li-Ion battery pack recharging time	4 hours

Ordering Information

Model	Includes
VFS2-00-0900	VFS2 Probe, VFS 2 LCD Display unit (3.5” (9 cm), AC adapter, and user's guide.
VFS2-00-0903	VFS2 Probe, VCP1 USB interface and basic software (requires computer with display), and user's guide.

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fiber end images displayed on a PC

VCP 1

Features

- Compact size
- Captures fiber end images directly into your computer
- Includes Includes “Video Capture”- Windows®-based software
- Converts analog video signal from Noyes RJ11 input to digital via USB A plug
- Supports NTSC or PAL system
- No battery - no need to install batteries or run off the AC adapter
- Low power consumption
- A single snap shot button takes still images at VGA solution (640 x 480 pixels)
- Low CPU utilization at decompression
- Plug and play installation

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VCP 1 USB Video Capture Port

The VCP 1 Video Capture Port is an interfacing module that provides high-speed composite video signal to a digital format conversion for capturing and displaying video data on a PC. The VCP 1 simply attaches via a standard USB connector to you computer and offers “plug and play” installation.

When used in conjunction with the VFS 2 probe or VS 300 video microscope, the VCP 1 Video Capture Port allows you to inspect fiber optic end-faces and capture viewed images on your computer. With the supplied easy-to-use Windows software, fiber end images can be saved and organized for analyzing, printing, and archiving.

The VCP 1 front panel includes the video capture button - [Snap Shot] for single shot video capture and the [Active] LED, which indicates that the unit is operating.

Batteries or an AC adapter are not required; the VCP 1 power is supplied via the USB connection. The VCP 1 is ideal for laptop or desktop use.

The VCP 1 package Includes: VCP 1 unit, CD-ROM with driver and software, and user’s guide.

System Requirements

- A 400 MHz (or faster) PC or laptop with USB 1.1 or better
- At least 800 x 600 SVGA display
- Windows 2000 or XP
- At least 128 MB of RAM
- A CD-ROM drive

Specifications

Interface Type	USB
Operating system	Windows 2000 and XP
Video input	Noyes RJ11 connector
Output	USB Standard (VCP 1 is a Twain compatible device using supplied software)
Analog video format	NTSC or PAL
Video capture resolution	640 x 480 pixels
Snap shot	Single button to capture still images at 640 x 480 pixels
Video capture format(s):	JPEG
Power source	5VDC @500 mA (max) through USB port to 6 foot cord
USB data bandwidth	4Mbps - 8Mbps isochronous
Weight	0.25 lb (0.11 kg)
Size (L x W x D)	4.0 x 2.2 x 1.0 in (10.2 x 5.6 x 2.5 cm)

For more information concerning Noyes fiber optic products and accessories please call 1-800-321-5298.

FTS-20C

FTS Series Fiber Optic Talk Sets

Fiber Optic Talk Sets are an inexpensive solution to meet your communication needs when testing multimode or single-mode fiber optic cables. Designed for voice communication over spare fibers, they provide full duplex, hands-free operation. Ease of use and compact size allow the operators to focus on the task at hand, rather than operating the talk set.

Two talk set models are available, the FTS 1 for communication on single-mode or multimode fiber and the FTS 2 for long-range single-mode applications. The FTS 2 model includes a multiparty communication feature, which provides the connection of two talk sets at a common site to extend the range or to include three or more persons in the conversation.

FTS-20C Clip-on Coupler

A clip-on coupler is available for bare fiber access where terminated ends are not available. The FTS 20C allows bi-directional communication from the center point on a fiber link or from the unterminated end. When used with a fiber talk set, such as the FTS2, the user can access the intended talk fiber at the mid-point across the span, usually at the splice enclosure. The FTS-20C can also be used in conjunction with a laser source or a tone detector to inject or detect 2 kHz test tones. It works at 1310, 1550, or 1625 nm. Coupling efficiency is approximately 18 dB.

Features

- Single fiber, full duplex
- Multimode and single-mode models
- Field portable, hands-free operation
- Automatic connection
- Multiparty communication
- Digital technology
- Call-back feature/ringing (FTS 2 model)
- Communicates with T500B talk option (FTS 2 model)

Ordering Information

MODEL	INCLUDES
FTS 1 FTS 2	Protective rubber boots, batteries, headsets, manual, and carry case.

Fiber optic talk sets are purchased in pairs. Two units are required for communication.

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Specifications

MODEL	FTS 1-2	FTS 2-1310	FTS 2-1550
OPTICAL SPECIFICATIONS			
Wavelength	1300 nm	1300 nm	1550 nm
Dynamic Range MM/SM	12 dB / 20 dB	45 dB	45 dB
Distance Range (km) Typical 62.5 or 50µm MM fiber[1] Typical 1310 nm-optimized SM fiber[2] Typical 1550 nm-optimized SM fiber[3]	 >10 50 40	 N/A 113 90	 N/A 150 180
Fiber Type	MM/SM	SM	
Connector	FC, SC, ST	FC, SC, ST	
Emitter Type	LED	Laser	
Emitter Classification	Class I FDA 21 CFR 1040.10 and 1040.11, IEC 60825-1: 2007-03		
GENERAL SPECIFICATIONS			
Power	9V alkaline	4 AA alkaline or AC adapter	
Weight in Use	0.25 kg (0.56 lb)	0.52 kg (1.16 lb)	
Size (H x W x D)	16.8 x 7.9 x 3.8 cm (6.6 x 3.1 x 1.5 in)	18.5 x 11.1 x 4.6 cm (7.3 x 4.4 x 1.8 in)	
Operating Temperature	0° to +50° C, RH 0 to 90% non-condensing		
Storage Temperature	-20° to +50° C, RH 0 to 90% non-condensing		

Notes:
1 2.8 dB/km @ 850 nm, 0.6 dB/km @ 1300 nm.
2 0.4 dB/km @ 1310 nm, 0.3 dB/km @ 1550 nm.
3 0.5 dB/km @ 1310 nm, 0.25 dB/km @ 1550 nm.

SVA 1 Singlemode Variable Attenuator

The SVA 1 Singlemode Variable Attenuator advances fiber optic field testing by offering superior performance in a low cost hand-held package. Utilizing a simplified, industry accepted attenuation technique, the innovative design of the SVA 1 offers superior resolution across the entire 60 dB dynamic range.

Intended for field testing during installation, new equipment turn-ups, or routine maintenance, the SVA 1 is a complete, easy to use attenuator. Its unique features allow bidirectional signal transmission with no loss penalty.

The SVA 1 is available with a variety of connectors and reflectance options to better than 60 dB. With only two adjustments, COARSE and FINE, the SVA 1 is simple to understand and operate. The SVA 1 is suited for all singlemode applications including Telco, LANs, WANs, Video, and CATV.

Features

- 1310 and 1550 nm single-mode
- Lightweight
- Coarse and fine adjustments
- 60 dB dynamic range
- Better than 60 dB isolation available
- FC, SC, or ST Style Outputs
- Low insertion loss

Specifications

Optical Specifications	**SVA 1**
Wavelengths	1310 nm & 1550 nm ± 30 nm
Insertion Loss	≤ 1.5 dB @ 1310 nm
Minimum Attenuation	60 dB
Return Loss	50 dB (≥ 60 dB optional - angled FC)
Coarse Adjustment	0 to 60 dB nominal
Fine Adjustment	0 to 10 dB nominal
Connector	FC, ST, SC
General Specifications	
Operating Temperature	-10 to +55°C
Storage Temperature	-30 to 60°C
Size (H x W x D)	5.5 x 2.75 x 1.5 in (14 x 7 x 3.8 cm)
Weight	6 oz. (168 grams)

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VOA5 Variable Fiber Optic Attenuator

The Noyes VOA5 from AFL Telecommunications is a handheld variable optical attenuator suited for a wide range of fiber link certification and production test applications. Two models are available, the VOA5-MM multimode and the VOA5-SM single mode model. The VOA5 attenuator offers high bi-directional return loss and will maintain the set attenuation level when the unit is powered down.

Input/output ports of the VOA5 are equipped with tool-free removable adapters to allow the output connectors to be inspected and cleaned. The VOA5 is powered by two (2) AA alkaline batteries or an AC power adapter. A NiCad rechargeable battery pack is available as an option.

Features

- Multimode and single-mode models
- High speed (0 to 60 dB < 3 seconds)
- 2 x AA alkaline, AC power, or optional NiCad battery pack
- Long battery life (> 16 hours)
- Handheld, rugged, lightweight (0.55 kg)
- Cost-effective, easy to use

Specifications

OPTICAL	VOA5-MM	VOA5-SM
Fiber Type	62.5 µm, multimode	9 µm, single-mode
Wavelength Range	850 - 1300 nm	1290 - 1620 nm
Calibrated Wavelengths	850, 1300 nm	1310, 1550 nm
Attenuation Range	0 to 30 dB	0 to 60 dB
Insertion Loss (max.)	1.5 dB @ 850 nm 3.0 dB @ 1300 nm	3.0 dB
Return Loss (min.)	20 dB	40 dB
Display Resolution	0.1 dB	
Accuracy @+25ºC	±0.20 dB typical, ±0.4 dB max (0 dB to 30 dB) ±0.3 dB typical, ±0.6 dB max (30 dB to 60 dB)	
Repeatability @+25ºC	± 0.25 dB*	± 0.45 dB*
Maximum Input Level	+ 24 dBm	
GENERAL	**VOA5-MM**	**VOA5-SM**
Battery Life (2 x AA alkaline)	10 hours	> 16 hours
Speed	0 to 30 dB in less than 5 seconds	0 to 60 dB in less than 3 seconds
Power	2 x AA alkaline, AC adapter, or NiMH battery pack (optional)	
Size (H x W X D)	18.5 x 11.1 x 4.6 cm (7.3 x 4.4 x 1.8 in.)	
Weight	0.55 kg (1.22 lb)	
Operating Temperature	0° to +50° C	
Storage Temperature	-20° to +60° C	
Relative Humidity	0 to 90% (non-condensing)	
Available Connectors	SC/UPC, FC/UPC, ST/UPC	

* *Repeatability is defined as the mean plus one standard deviation typical value.*

Ordering Information

MODEL	INCLUDES
All VOA5 models	Protective rubber boot, 2 x AA alkaline batteries, 120/ 220 V AC power adapter*, manual, and carry case.

* *Specify optical connector and AC power cord type.*

NOYES Test & Inspection
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Fusion Splicer Systems Catalogue